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BLACKWATER FEVER.

YORKE (Warrington), MURGATROYD (F.) & OWEN (D. Uvedale). **Observations on Five Cases of Blackwater Fever.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1930. Jan. 30. Vol. 23. No. 4. pp. 335–372. With 5 charts. [28 refs.]

This paper is based on an intensive study of five cases of blackwater fever admitted to the hospital of the Liverpool School of Tropical Medicine. Two of the patients were sailors who had been travelling to and from the West Coast of Africa for many years ; the other three were old residents there. Each of them gave a history of one or more attacks of malaria, and in every case the onset of blackwater was immediately preceded by attacks of malaria. In four of the cases, the blackwater developed after admission to hospital, while they were undergoing treatment for malaria. Case (1) had been in hospital three days, and had taken 45 grains of quinine ; case (2), four days, with 30 grains ; case (3), three days,with 105 grains ; case (4), three days, with 90 grains. In one case, an injection of 15 grains, given shortly after the onset of blackwater, was followed by an exacerbation, and a further dose, three days after the haemoglobinuria had ceased, was followed by a relapse. Dr. G. R. Ross, in the discussion following the paper, agreed that the part played by quinine in the genesis of the attack was considerable, and that sometimes the relationship was dramatically demonstrated.

Touching the question of a recognizable pre-blackwater stage, as defined by MANSON-BAHR, the authors observed no premonitory signs in their patients to suggest that they were going to develop blackwater ; its onset was wholly unexpected. Examination of the blood and urine, before the onset, showed neither increased haemoglobinaemia in the one, nor increased urobilinogen in the other. In one of the cases, the physical appearance of the patient suggested a haemolytic process which commenced suddenly, for, within a few hours of the onset, he was obviously anaemic, and within 48 hours he was blanched. The authors do not look upon blackwater as a single event resulting in the destruction of a large proportion of the red blood cells, but rather as a series

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of events spread over several days. In one of their cases, for example, the count was 3,620,000 two hours after the onset ; during the first 12 hours the decline in the number of corpuscles was 200,000 ; during the next 24 hours it was 700,000 ; during the next 24 hours it was 1,200,000. The rapid fall from 3,620,000 to 1,600,000 red cells indicated how great the haemolysis was—a loss equal to 2 litres of blood ; but only a small proportion of the haemoglobin liberated by this blood destruction was passed in the urine. The total amount which escaped in this way represented only about 185 cc. of blood, and the same was observed in other cases. During the first two days, the plasma of this patient contained an amount of haemoglobin approximately equal to a 0·5 per cent. solution of normal blood ; just after the period of most intense haemoglobinuria, on the third day, it rose to 1·1 per cent. In another case haemoglobin values as high as 0·5 per cent. were recorded on certain days when there was no haemoglobinuria ; there was great renal impairment in this case, and it is suggested that this raised the threshold for haemoglobin. The degree of haemoglobinaemia is strikingly small, in view of the massive haemolysis, when compared with the haemoglobinaemia of dogs infected with babesia, where values up to 12·5 per cent. have been recorded. In babesia, the haemolysis is in direct proportion to the degree of infection and it occurs in the blood-stream. The relatively low haemoglobinaemia values in blackwater fever may be due to the haemolysis taking place in the sinuses of the liver and spleen, the haemoglobin reaching the blood-stream more slowly than in babesia infections. The contents of these venous sinuses are probably discharged at irregular intervals, thus producing the series of critical exacerbations.

It is suggested that the haemoglobin is rapidly converted into bilirubin A, which is converted into bilirubin B in the liver. The occurrence of haemoglobinaemia, and the demonstration that the kidney lesions seen in blackwater fever can be produced in an experimental animal by the inoculation of its own haemoglobin, disposes of PLEHN'S hypothesis. This hypothesis is to the effect that the primary lesion in blackwater lies in the kidney, and that a direct communication between the capillaries and tubules permits the escape of blood direct into the urine where it is laked owing to the absence of urea and salts. As to the cause of the haemolysis, the authors agree that there is no doubt that previous malaria is essential for the development of blackwater, but they do not agree that its appearance results from the sudden destruction of large numbers of parasites. Parasites were found, on admission, in only two out of four cases which developed blackwater in hospital ; and, in these two, the infection was very scanty. One of them had been under quinine treatment in hospital for three days before the onset of blackwater, and all trophozoites had disappeared ; a spleen puncture was made three hours later, but no parasites could be found except a few crescents ; yet, in spite of this, a series of very severe haemolytic crises occurred during the next 48 hours.

The authors question the accuracy of the dicta that : (1) the degree of infection of the peripheral blood, in subtertian malaria, is not a criterion of the mass of infection in the body, and (2) that the trophozoites retire to the internal organs to complete their schizogony. In simple tertian fever, they found that blood from the ear and from the spleen showed similar degrees of infection. In seven cases of malignant tertian, they

found a similar correspondence between films made from the peripheral blood and from the spleen ; when the infection was scanty in the peripheral blood, it was scanty in the spleen also. SORGE (see this *Bulletin*, Vol. 26, 1929, p. 929) has shown that the bone-marrow is not a swarming ground for parasites. Segmenting trophozoites were not found in spleen smears in light infections with malignant tertian, and the authors suggest that *P. falciparum* may multiply by binary fission ; an hypothesis which would explain the large proportion of rings possessing two chromatin dots and also the frequency with which red cells contain more than one ring. The orthodox view is based on the finding of schizonts in the capillaries of the internal organs after death, and in the peripheral circulation only in severe and fatal infections. It seems to the authors " quite possible that *P. falciparum* may behave in one manner when its reproduction is practically uncontrolled, as in the culture tube, in the terminal stages of fatal infections, and even in comparative health, in such situations as the placental sinuses ; but in quite a different manner when it is subject to the control exercised by the host in infections of ordinary severity."

In the discussion which followed Dr. C. M. WENYON said that malignant tertian rings grew into schizonts on culture in the same way as the rings of the other forms, and that, as there was no reason to assume reproduction by binary fission in the case of simple tertian and quartan parasites, it was unnecessary to do so for the malignant forms. Dr. Gordon THOMSON also disagreed with this hypothesis of binary fission. Dr. G. W. ROSS agreed with the lecturer and his colleagues that it was impossible to distinguish a pre-blackwater state. The degree of bilirubinaemia in his cases was much greater than in these. He regarded the early indirect reaction of the van den Bergh test as due to haemolysis, and the direct reaction, which appears later, as due to obstruction from inspissated bile. Dr. MANSON-BAHR agreed that the haemolysis probably took place in the spleen, which shrinks rapidly as the haemolysis clears up. BARCROFT'S observation on the shrinkage of the spleen after extensive blood destruction supported this hypothesis. The last four cases at the Hospital for Tropical Diseases in London had been transfused with blood and the results had been better than anything he had seen before. Dr. Hamilton FAIRLEY concurred in the efficacy of this treatment. He drew attention to the great danger of giving intravenous injections of sodium bicarbonate ; this drug was nevertheless of great benefit by the mouth, and it should always be given by that route. He agreed with Dr. MANSON-BAHR that the careful observation of a small number of cases in England was likely to be more useful than a host of undigested statistics procured as the result of wanderings in the bush. A team was investigating the disease at the Hospital for Tropical Diseases, in conjunction with Dr. MCNEE. Dr. Uvedale OWEN stated that he had found during the treatment of polycythaemia with phenol hydrazin, that a definite degree of haemoglobinaemia must be reached before haemoglobinuria occurred, showing that there was a renal threshold for haemoglobin. Dr. LOW agreed with the lecturer that there was no recognizable pre-blackwater state. He endorsed the view that the transfusion of whole blood was of great value. Blackwater fever was still a riddle ; there were definite blackwater areas, he said, and the geographical distribution of malaria did not correspond with these.

William Fletcher.

EBERT (M. K.). Zur Frage der Pathogenese der Hämoglobinurie bei der Malaria (Schwarzwasserfieber). IV. Mitteilung. [**The Pathogenesis of Haemoglobinuria in Malaria (Blackwater Fever). IV. Communication.**]—*Ztschr. f. Immunitätsf. u. Experim. Therap.* 1930. Vol. 65. No. 1/2. pp. 161–175. [11 refs.] [Microbiol. Research Inst., Education Commissariat R.S.F.S.R., Moscow.]

The present work is a continuation of previous investigations on this subject by KRITSCHEWSKI, MURATOWA and the author [this *Bulletin*, Vol. 21, p. 386 and Vol. 25, p. 160 and p. 900]. It had been found in the earlier work that the individuality of the erythrocytes played an important part in the amount of haemolysis resulting from the combination quinine+lecithin. Ebert has now examined the erythrocytes from 100 individuals representing all four blood groups with a view to ascertaining whether the differences are related to the different blood groups. His observations are summarized in tables from which it is seen that the variations in intensity of haemolysis depended on variations in the erythrocytes of different individuals and had nothing to do with blood groups.

In further experiments the effect of temperature on the reaction was examined. Observations were made at 37° C. and at 40° C. respectively, and it was found that raising the temperature increased the intensity of the quinine+lecithin haemolysis. Similarly it was found that raising the temperature likewise increased the intensity of the quinine+serum haemolytic reaction of GHIRON [this *Bulletin*, Vol. 24, p. 657].

Ebert then passes to a consideration of the effect of alcohol on the reaction. He remarks that the use of alcohol during the course of malaria and other infections is harmful and quotes ZIEMANN in support of his contention. Experimental work showed that the resistance of red cells, which have been previously subjected to the action of minimal quantities of alcohol, and of red cells from a chronic alcoholic, is lowered so that a more intense haemolysis results when they are subjected to the influence of quinine+lecithin.

W. Yorke.

NOCHT (B.). Ueber hämolytische Chininwirkungen. [**On the Haemolytic Action of Quinine.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1929. Vol. 33. No. 3. pp. 21–24 (105–108).

In this address Nocht summarizes his views on the mechanism of the haemolytic crisis in blackwater fever; he bases his argument mainly on the recent experimental work of KIKUTH and himself [this *Bulletin*, Vol. 26, p. 1028].

It was found that quinine greatly intensified the haemolytic action *in vivo* of heterogeneous haemolytic amboceptors, cobra venom and lysozithin, but had no effect on that due to toluylenediamine and phenylhydrazine. This intensifying action was, however, not seen in experiments performed in the test tube. On the contrary, however, quinine assisted the haemolytic action of lecithin in the test-tube, but not in the animal body. Other cinchona alkaloids such as cinchonine, and substances like plasmochin or antipyrin, did not exhibit this property of intensifying the haemolytic action of amboceptor and cobra venom.

When they are present in large amounts, amboceptor, cobra venom and lysozithin can produce haemolysis and haemoglobinuria without the assistance of quinine; and Nocht believes that similarly the unknown haemolytic substance when present in large amounts can produce an attack of blackwater fever as the result of exposure to cold or over-exertion, but that when it is present in smaller amounts the stimulating effect of a dose of quinine is necessary before it can manifest its presence by producing a haemolytic crisis.

Dealing with the question, what is this hypothetical haemolytic substance? Nocht states that many investigators have claimed to have demonstrated such a substance, but all his endeavours to confirm their claim have been in vain. Nocht will not go so far as to say that all work in this direction will prove futile, but he believes that a haemolytic body will only be found if it happens to exist in enormous amount. He refers to the fact that we can inject sufficient heterologous haemolytic amboceptor into an animal to produce severe haemoglobinaemia and haemoglobinuria without being able to detect its presence in the circulating blood of the injected animal. It is there in too great dilution or else not present at all; the haemolysis takes place in the internal organs.

The work of Borchardt and Tropp and others has shown that such destruction products of the blood as occur in malaria are unable, either alone or in combination with quinine, to provoke haemolysis. This is also true of haematin. Of special interest is the finding of the author and Kikuth that a neutral combination of haemolytic amboceptor and antihaemolysin produces haemolysis and haemoglobinuria if injected into an animal together with quinine; the drug either neutralizes or, at least, partially inhibits the antilysin.

It has long been known that cholesterin exhibits the power of limiting the haemolytic action of cobra venom and lecithin both *in vitro* and *in vivo*. Nocht was unable to lower appreciably the cholesterin content of the serum by rendering animals anaemic and so forth, but it is easy to raise the content by feeding an animal on cholesterin. Such animals are less susceptible to the haemolytic action of amboceptor, etc., than are normal animals, but the author was unable to demonstrate that they exhibited any great protection against the action of quinine.

Nocht conceives that three factors are necessary to produce an attack of blackwater fever: (1) an unknown haemolytic substance which is the result of malaria; (2) a lowered cholesterin content so that the protective effect of this substance is decreased; and (3) quinine.

Nocht and his colleagues have found that in fact, the cholesterin content of the blood in chronic malaria and especially in a case of blackwater fever was definitely low; in the last case, some days after the attack of blackwater the blood cholesterin had returned to the normal amount. A similar low cholesterin content was observed in the blood of two syphilitics who had been infected with malaria. A possible explanation of the fact that quinine evoked an attack of blackwater in the former case, and not in the latter cases is that the blackwater patient had had malaria for a long time, and consequently his blood contained the unknown haemolytic substance, whereas the syphilitics had had malaria only for a short time, and therefore their blood contained little or none of the haemolytic substance.

Turning to the question of prevention of blackwater fever, Nocht states that so long as malaria was treated by decoctions of cinchona

bark blackwater fever was practically unknown. One alkaloid of cinchona, viz., cinchonine, does not intensify haemolytic processes like quinine, but unfortunately it is not so active against tropical malaria as is quinine. It has been recently shown that "kinetum," a total extract of cinchona bark, is just as active in malaria as quinine itself. Should experiments show that kinetum does not intensify haemolytic processes or does so to a much less extent than quinine, then we shall have in kinetum and plasmochin drugs which will do much to lessen the ravages of blackwater fever.

W. Y.

BOASE (A. J.). **Report on Blackwater Fever in Uganda for 1928.**—*Uganda Protectorate Ann. Med. & San. Rep. for Year ended 31st December, 1928.* Appendix No. IV. pp. 84–89. With 1 chart.

During the year 1928, 166 cases of blackwater fever were treated in the Protectorate. This number is considerably above that recorded for 1927 and is the second highest figure reported for any year. Of the 166 patients 40 (24·1 per cent.) died. In a table the number of cases and deaths occurring in each of the last twenty years is given. Information is also given regarding the distribution of cases (European and Asiatic) throughout the Protectorate. The paper contains a chart showing the seasonal incidence of blackwater fever and malaria, and also the rainfall and temperature of the different months throughout the year 1928. Other information given relates to race, sex, age, length of residence in the tropics, previous attacks of blackwater, quinine habits, microscopical examination of the blood, and so forth.

W. Y.

WHITMORE (Eugene R.) & ROE (Joseph H.). **Further Study of the Blood in Blackwater Fever.**—*Eighteenth Ann. Rep. Med. Dept. United Fruit Company, Boston, Mass.* 1929. pp. 59–64. [5 refs.]

Reference is made to a previous report on the results of study of the blood in blackwater fever (this *Bulletin*, Vol. 26, p. 1026). Irregular results indicated that chemical examination of blood taken to Washington was not entirely satisfactory. Since the publication of this report, the methods of preserving blood by the use of sodium fluoride and of making chemical examinations of blood thus preserved have been improved.* In the present work the determinations of the carbon dioxide combining power of the plasma and the van den Bergh tests were made in the field as soon as the blood was taken. Material for all other chemical examinations was sent back to Washington, the blood being collected in Kimble venules containing 10 mgm. of sodium fluoride per cc. of blood and kept on ice until arrival at Washington. A summary of each of the six cases thus examined is given, and the results of the blood examinations are summarized in the following table.

* Roe, J. H., Irish, O. J., and Boyd, J. I. The Preservation of Blood for Chemical Analysis by the Use of Sodium Fluoride. *Jl. Biol. Chem.* 1927, Vol. 75, p. 685.

RESULTS OF CHEMICAL EXAMINATION OF BLOOD IN BLACKWATER FEVER (WHITMORE).

TABLE.

Patient.	Days standing before Analysis.	Non-protein Nitrogen.	Urea Nitrogen.	Uric acid.	Creatinine.	Sugar.	CO_2 combining power.	Calcium.	Cholesterol.	Lecithin.	Bilirubin.	Total Phosphorus.
R.D. ... #12	10	61	40	3·6	1·1	57	49	10·4	178	282	indir. 5·77	35
J.M. ... #18	10	71	38	6·0	1·3	112	48·5	8·7	114	149	indir. 11·19	34
R.P. ... #23	15	49	23	4·5	—	82	—	—	182	237	—	—
J.G. ... #25	15	64	32	4·3	—	113	—	10,0	150	195	indir. 5·19	—
A.G. ... #20	14	149	72	10·4	3·0	107	—	9·5	125	171	indir. 4·17	22
L.V. ... #2	14	182	125	9·1	6·0	128	35	—	160	290	—	24
Normals ...	—	25–35	10–15	1–4	1–2	65–110	50–75	9–11	160–200	240–300	0–0·6	25–40

From this table it appears that of the 12 substances determined the sugar, calcium, cholesterol, lecithin and total phosphorus give normal findings. The values of non-protein nitrogen and its fractional constituents show a definite elevation of these substances. The determination of the CO_2 combining power of the plasma shows that in two cases the values obtained were just below the normal limit, whilst in the third case there was a definite reduction of the CO_2 combining power of the plasma ; in this case the urinary secretion was re-established when alkali treatment was used

The article closes with the following remarks :—

Our material is too small to warrant the drawing of any conclusions ; but we feel that we have worked out our plan of procedure to where we have a satisfactory method of carrying on these newer studies on blackwater fever ; and we can continue with the collection of data. Our results indicate that nitrogen retention is very commonly—if not generally—present ; indicating disturbance in the secretory activity of the kidneys ; and that this nitrogen retention may be so marked as to give the blood chemistry picture of an acute nephritis. This is in accordance with the post-mortem finding of acute nephritis in some of the cases of blackwater fever. In our results so far there is no evidence of any marked deviation from the normal in any of the other chemical constituents of the blood ; notably, sugar, calcium, cholesterol, and lecithin.

W. Y.

Glover (W. E.) & Connal (Andrew). **An Unusual Blood-Picture in Blackwater Fever.**—*West African Med. Jl.* Lagos. 1929. Oct. Vol. 3. No. 2. pp. 32–33. With 2 figs. on 1 plate facing p. 48.

The patient, who was a ship's cook, had been ill at sea for three days before admission to hospital at Port Harcourt. The temperature had been round about 103° F. during that time and there had been persistent vomiting with great restlessness and sleeplessness. He had been given 10 grains of quinine on January 22nd and 23rd. When seen by the authors on the morning of the 24th the patient was dull, apathetic and jaundiced ; he looked very ill and there was slight dyspnoea. There was no history of having passed black water. Two hours after admission to hospital he was given 10 grains of quinine bi-hydrochloride intramuscularly, and two hours later passed black water. Recovery was rapid. Blood smears made on the day of admission and the following day showed numerous parasites ; a number of differential leucocyte counts and Arneth counts are given.

The authors believe that the patient was probably suffering from blackwater fever when admitted to hospital. They observe that the blood picture was remarkable ; in addition to the heavy subtertian infection there was evidence of pronounced phagocytic activity of the leucocytes.

W. Y.

i. Fairley (Keith D.). **Cholelithiasis as a Sequel of Blackwater Fever.**—*Lancet.* 1930. June 28. pp. 1395–1396. [12 refs.] [Walter and Eliza Hall Inst., Melbourne.]

ii. Manson-Bahr (Philip). **Cholelithiasis after Blackwater Fever.** [Correspondence.]—*Ibid.* July 12. p. 106.

i. An interesting account is given of the occurrence of a sub-acute cholecystitis in a patient with a large biliary pigment calculus formed presumably as a result of previous attacks of blackwater fever. The author remarks that the only disease in which calculi of this nature are commonly found is acholuric jaundice. The increased resistance of the

red cells to hypertonic saline and the low reticulocyte count are sufficient to exclude this diagnosis in the present case. Reference is made to the fact that many authors have observed characteristic changes in the bile at post-mortems on blackwater fever cases. It is commonly agreed that the gall-bladder in these cases is full of dark inspissated bile. Fairley believes that pigment gall-stones may prove to be a not uncommon sequel of an attack of blackwater fever.

ii. Manson-Bahr mentions that he has recently met with an instance of recurrent biliary colic in a patient recovering from a severe attack of blackwater fever. Brief details of the case are given.

W. Y.

Cort (E. C.). **Treatment of Blackwater Fever.**—*Amer. Jl. Trop. Med.* 1929. Sept. Vol. 9. No. 5. pp. 401–406. [12 refs.] [McCormick Hosp., Chiengmai, Siam.]

After a brief discussion of various theories which had been advanced to explain the genesis of an attack of blackwater fever, the author passes to the question of the treatment of the disease. His cases are divided into two groups. In the first group, consisting of 41 cases, the treatment was largely symptomatic. At first quinine was given in all cases showing parasites and in some others, but small doses, 5 grains, having apparently produced relapses, its use was discontinued in the acute stages of the disease. Atoxyl or sodium cacodylate was given in nearly all cases and the vomiting controlled by small doses of morphine and hyoscine. Fluids were given by the mouth or by injection, and alkalis were used to some extent. The author is of opinion that the most important factors in recovery were the control of temperature by hydrotherapy and the forcing of fluid intake. Of the 41 patients, 8 died, giving a fatality of 20 per cent., which, as the author states, coincides with experience elsewhere.

In the second group, consisting of 26 cases, neo-arsphenamine was given, apparently on the ground that it is useful in the treatment of simple tertian infections and that there is some evidence of its value as an adjuvant to quinine in malignant tertian malaria. The drug was given in small doses 0·15 gm. daily for three days, then after an interval of three days 0·30 gm. and, finally, weekly doses of this amount for three or four weeks and fortnightly doses for the next three to six months. In a few cases the injections seemed temporarily to increase the severity of the haemoglobinuria ; but this quickly subsided and convalescence was usually rapid. None of the 26 patients thus treated died. The author remarks that undoubtedly much of the favourable results in the second series of cases was due to improvement in the general treatment, especially in regard to the use of alkalis.

W. Y.

Conil (J.). Considération sur le traitement de la fièvre bilieuse hémoglobinurique. [**Treatment of Blackwater Fever.**]—*Bull. Soc. Path. Exot.* 1929. Oct. 9. Vol. 22. No. 8. pp. 739–743. [Principal Hosp., Dakar.]

The suggestions for treatment discussed in this paper are based on observations of 27 cases of blackwater fever which came under the author's care during a period of 20 months at Dakar. Conil contrasts

the usual mortality of the disease—25 per cent.—with his own striking success; he lost only a single case.

The author's treatment always commenced by warming the patient up even though he was no longer cold, and in controlling his desire to engorge himself with water. He states that the kidneys of a case of blackwater are going to have plenty to do without adding to their work; one does not cure a myositis of the psoas by making the patient walk; flushing the kidneys of a haemoglobinuric is a metaphor and nothing more. Conil never gave more than 2 litres of fluid in small doses in 24 hours, and it was never chilled except when the stomach was so irritable that it could not retain fluid at room temperature. Quinine was never given.

There are two antihaemolysins at our disposal, viz., anti-venom serum and calcium chloride. The author always injects 20 cc. of anti-venom serum morning and evening whilst the urine is coloured and gives 10 gm. of calcium chloride during the 24 hours. As the drug cannot even in dilute solutions be retained by the blackwater fever stomach, it should be given rectally. It is recommended to give twice daily a rectal injection consisting of 300 cc. of a solution containing 45 gm. of glucose per litre to which is added 5 gm. of calcium chloride.

The author does not approve of injections of physiological saline. As the result of 4 years' experience of cholera at Saigon, he has observed that, notwithstanding the brilliant results of treatment of this disease by saline injections, a number of cases, cured of cholera, die of anuria. Believing that the sodium chloride by causing a renal oedema is responsible for this catastrophe, Conil has replaced the sodium chloride by glucose, with the result that the deaths from anuria have been definitely fewer. He states that in his work at Dakar he has often received at hospital blackwater patients who before admission have been given considerable injections of saline; in almost all convalescence was long and tedious with persistent albuminuria. The single fatal case in the author's series belongs to this category.

As soon as the attack of blackwater is definitely over quinine treatment is carefully commenced, beginning with 5 cgm. the first day, 10 cgm. the next, then 20 cgm. and so on, up to 1·5 gm. Daily doses of 4 gm. of calcium chloride are given at the same time.

W. Y.

ARNELL (H. M.). **The Treatment of Blackwater Fever.**—*Kenya & East African Med. Jl.* 1929. Nov. Vol. 6. No. 8. pp. 237–239.

After stating "there is probably, at the moment, a greater divergence of opinion concerning the treatment of malaria and blackwater fever than of any other disease," the author advocates the use of a form or schedule so that records of cases treated by different methods can be compared. The suggested schedule should give full details of the attack, including the temperature chart, pulse rate, duration and intensity of haemoglobinuria, jaundice, amount of vomiting, treatment and nursing.*

W. Y.

* Such a schedule is in use in the Colonies. Copies could doubtless be obtained by Dr. Arnell and others.

Ulmi (Priamo). Contributo alla plasmochinoterapia nella emoglobinuria da chinina dei malarici. [**The Treatment by Plasmochin of Quinine Haemoglobinuria in Malarial Patients.**]—*Giorn. di Clin. Med.* 1930. Aug. 31. Vol. 11. No. 12. pp. 874, 877–880.

Three cases are quoted : (1) a child of 7 years who tolerated euquinine well, but when given quinine tablets [salt not stated] passed black water. Two cgm. daily of plasmochin was followed in 3 days by disappearance of the haemoglobinuria and recovery was uneventful. (2) A man of 42 years, who had a severe attack of blackwater fever on taking quinine for an obstinate malaria infection. Plasmochin 6 cgm. daily for 3 days cleared the urine and the drug was continued, 4 cgm. daily for 45 days, and for the next 2 months, 3 cgm. for 7 days followed by 4 days' rest. (3) A man of 34 years, with history closely similar to the last except that the plasmochin was given by injection in a dose of 3·2 cc., but a month after ceasing to take plasmochin he took two tablets only [? dose] of quinine and the black-water returned ; the patient was very ill with temperature 40·4° C., pulse 150, marked anaemia and respiratory distress. A renewal of the injections of plasmochin brought speedy cure and the drug was thereafter continued by mouth. This preparation was well borne in spite of the idiosyncrasy or intolerance to quinine shown by all three patients.

H. H. S.

Yorke (Warrington). **A Case of Quinine Haemoglobinuria.**—*Ann. Trop. Med. & Parasit.* 1930. Oct. 22. Vol. 24. No. 3. pp. 477–479.

A child of 3 years, born in Rhodesia, was brought to the author in England with a history of passage of black water on five occasions after small doses of quinine (one grain or half a grain). In infancy the drug was taken well, and only after a second attack of malaria did she become hypersensitive to quinine. The author found that the hypersensitivity still persisted but a larger dose was required for its elicitation. On each occasion recovery was rapid.

A. G. B.

Liverani (Ettore). Contributo alla conoscenza dell' emoglobinuria da chinino nei malarici. (**Contribution to the Study of the Hemoglobinuria caused by Quinine.**)—*Riv. di Malariologia.* 1929. Nov.–Dec. Vol. 8. No. 6. pp. 674–684. [112 refs.] [English summary pp. 747–748.] [Inst. of Clin. Med., Univ., Rome.]

Details are given of a series of twenty cases of blackwater fever observed in hospital at Rome. Almost all had suffered from malignant tertian malaria, and in all cases the actual attack of blackwater was precipitated by the administration of one of the cinchona alkaloids—17 by quinine, two by chinidin, and one by cinchonine.

W. Y.

Moncarey. Deux cas d'hémoglobinurie malarienne chez des indigènes du Congo. [**Two Cases of Blackwater Fever in Congo Natives.**]—*Ann. Soc. Belge de Méd. Trop.* 1929. Oct. 30. Vol. 9. No. 3. pp. 275–277.

In view of the fact that instances of true blackwater fever are very rare amongst the natives of the Belgian Congo, the author has considered it worth while recording details of two such cases.

The first was that of a woman, who, on admission to hospital, had a temperature of 39·2° C., was intensely icteric, and had bilious vomiting and

epigastric pain, with enlargement of the liver and spleen. Shortly after admission she passed 150 cc. of almost black urine. The following day she developed suppression and eventually died of coma. Examination of the blood showed a scanty infection of *Plasmodium falciparum*.

The second case was that of a man who had a mild attack and recovered.

W. Y.

Forbes (J.). **Treatment of Blackwater Fever.**—*Kenya & East African Med. Jl.* 1929. Sept. Vol. 6. No. 6. pp. 152–157.

The author recommends in the treatment of blackwater fever the use of MacLean's powders, viz. :—

Sod. Bicarb.	2½ ozs.
Calc. Carb.	5 ozs.
Mag. Carb. Pond.	5 ozs.
Bismuthi Oxy. Carb.	10 drs.

He gives one flat teaspoonful every two hours in water from 6 a.m. to 10 p.m. when a double dose is given.

W. Y.

Shircore (J. O.). **Metabolism in Blackwater Fever.** [Correspondence.]—*Lancet.* 1930. July 12. pp. 106–107.

As a result of his meditations on Donald Hunter's Goulstonian Lecture on the Significance to Clinical Medicine of Studies in Calcium and Phosphorus Metabolism, Shircore has reached the conclusion that it might be worth investigating the question of phosphorus metabolism and the influence of phosphatase in blackwater fever. He proceeds to elaborate an hypothesis to explain the disease without unfortunately producing any definite facts to support it.

W. Y.

Kazariane (A. D.). Sur un cas de fièvre bilieuse hémoglobinurique. [**A Case of Blackwater Fever.**]—*Russian Jl. Trop. Med.* 1929. Vol. 7. No. 5. pp. 315–317. With 1 chart in text. [In Russian. French summary.]

A description is given of a case of blackwater. The summary contains nothing worthy of note.

W. Y.

Mathieu (H.). Notes sur la fièvre bilieuse hémoglobinurique à Luang-Prabang (Laos). [**Notes on Blackwater Fever in Laos.**]—*Bull. Soc. Méd.-Chirurg. Indochine.* 1930. Apr. Vol. 8. No. 4. pp. 297–303. With 1 chart in text.

Cases of blackwater fever are met with at Luang-Prabang in small numbers throughout the year. Of the 27 cases seen during 1929 seven died. The article concludes with some remarks on treatment.

W. Y.

Makel (H. P.) & Gilder (Wayne). **Blackwater Fever.**—*Milit. Surgeon.* 1930. Aug. Vol. 67. No. 2. pp. 156–164. [6 refs.]

After giving a general account of the disease, the authors describe in detail four cases which have come under their care. The paper contains nothing new.

W. Y.

WAKEMAN (A. M.) & MORRELL (C. A.). **The Blood and Urine in a Mild Case of Blackwater Fever.**—*West African Med. Jl.* Lagos. 1929. July. Vol. 3. No. 1. pp. 6–7. [3 refs.] [Internat. Health Division, Rockefeller Foundation, Lagos.]

A clinical account is given of a mild case of blackwater fever, accompanied by details, in a tabular form, of examinations of the blood and urine.

W. Y.

CARMODY (Ernest P.). **Blackwater Fever.**—*Jl. Med. Assoc. South Africa.* 1929. July 27. Vol. 3. No. 14. pp. 389–390.

A brief summary is given of the symptoms, complications and treatment of 70 cases of blackwater fever occurring in Mashonaland, Southern Rhodesia, between March, 1921, and April, 1927.

W. Y.

STEPHENS (J. W. W.). **The Distribution of Blackwater Fever in North America.**—*Ann. Trop. Med. & Parasit.* 1929. Dec. 31. Vol. 23. No. 4. pp. 451–481. With 2 maps. [4 pages of refs.]

This paper is simply a record of cases of blackwater which have occurred in different parts of Northern America. An extensive bibliography is given.

W. Y.

ALAIN. Observation de fièvre bilieuse hémoglobinurique.—*Ann. de Méd. et de Pharm. Colon.* 1930. Jan.–Feb.–Mar. Vol. 28. No. 1. pp. 90–92.

DE BAUDRE. Syndrome de fièvre bilieuse hémoglobinurique.—*Ann. de Méd. et de Pharm. Colon.* 1929. July–Aug.–Sept. Vol. 27. No. 3. pp. 465–468.

BIDDAU (Igino). Febbre ittero-emoglobinurica e plasmochina.—*Riv. di Malariologia.* 1930. Jan.–Feb. Vol. 9. No. 1. pp. 53–60. With 1 chart in text. [English summary (6 lines) p. 95.]

GOURMELON. Observation de fièvre bilieuse hémoglobinurique.—*Ann. de Méd. et de Pharm. Colon.* 1929. July–Aug.–Sept. Vol. 27. No. 3. pp. 463–465.

LE COUSSE. Un cas de fièvre bilieuse hémoglobinurique.—*Ann. de Méd. et de Pharm. Colon.* 1930. Jan.–Feb.–Mar. Vol. 28. No. 1. pp. 93–94.

MIRRA (Guido). La febbre biliosa-emoglobinurica tra gli indigeni della Somalia.—*Arch. Ital. Sci. Med. Colon.* 1930. Jan. 1. Vol. 11. No. 1. pp. 24–27. [10 refs.] English summary (1 line) p. 28.

NAIR (K. G.) & RAJU (S.). A Case of Blackwater Fever.—*Indian Med. Gaz.* 1930. Jan. Vol. 65. No. 1. p. 16.

SCOTT (G. Waugh). Blackwater Fever in Malaya.—*Malayan Med. Jl.* 1929. Sept. Vol. 4. No. 3. pp. 83–85.

MISCELLANEOUS.

CLELAND (J. Burton). **Disease amongst the Australian Aborigines.**—*Jl. Trop. Med. & Hyg.* 1928. Vol. 31. pp. 53–59; 65–70; 125–130; 141–145; 157–160; 173–177; 196–198; 202–206; 216–220; 232–235; 262–266; 281–282; 290–294; 307–313; 326–330. [74 refs.]

This series of articles touches only incidentally the subjects which usually form the matter of this *Bulletin*. The author points out that the pure-blooded Australian aborigine is fast dying out, so that it seemed advisable to collect all possible information about his diseases, and how he reacts to them. He has had recourse to official records and acknowledges assistance from a large number of people; the list of references (page 235) cannot fail to be of value. A conspectus of the ground covered is given on the first page. The later sections are devoted to epilepsy and insanity.

A. G. B.

LAMBERT (J. M.). **First Annual Report of the Western Pacific Health Service.**—*Fiji Ann. Med. & Health Rep. for Year 1928.* pp. 74–86. With 11 figs. on 4 plates & 6 plans.

The Western Pacific Health Service operates in Fiji, Gilberts and Ellices, British Solomons and the New Hebrides Condominium. It is concerned with hookworm disease and soil sanitation, yaws treatment and, in the case of Fiji, with treatments for ringworm. The Service is directed by the Rockefeller Foundation Director for the South Pacific who serves under the Chief Medical Officer for Fiji. The headquarters is in Suva, Fiji. The distance between the islands and the poor communications render the work difficult. The Central Medical School at Suva, with which also the W. P. Health Service is concerned has 40 students, from all the islands of the Service as well as from Western Samoa, Tonga and Cook Islands. The Suva War Memorial Hospital, to which the School has access, has over 100 beds. The course is at present 3 years. This new school, an extension of the old, is expected to have a profound effect on the health of the Pacific Island races. Fiji now has 47 native practitioners; owing to their isolation, many are rarely inspected; a Travelling M.O.H. has now been appointed to visit them.

Campaigns against yaws and ringworm in Fiji and yaws and hookworm in the Ellices and British Solomons were begun in January, 1928. Yaws and hookworm are the largest factors of preventable disease. Mass attacks on their incidence should so reduce them that the gain can be held by the native practitioners. Discussing treatment by carbon tetrachloride the author says he has never seen a case of poisoning among Tongans, Samoans, Raratongans, Fijians or Solomon Islanders; the trouble has always been amongst Indians usually with massive roundworm infection. LAMSON'S work suggests that the Indian diet is low in calcium, while that of the Fijians, etc., is richer [this *Bulletin*, Vol. 25, p. 469]. 20,153 hookworm treatments were given in the year.

Yaws is the greatest cause of morbidity in S. Pacific populations, and probably the greatest cause of infant mortality. About 50 to 75 per cent. of any population shows symptoms at any time. In others

the disease is quiescent and they, it is believed, keep it alive when the active cases are treated. The author agrees with others that Pacific Island yaws gives immunity to syphilis. A survey was made of Rotumah, an isolated compact island with an accessible population of 2,400. A yaws history was obtained of every youth, and the results are tabulated. The table shows that after the age of four years and up to seventeen, all the children are infected though a number varying from 13 to 68 per cent. at different ages show no signs. " The best hope of eradicating yaws is to give mass treatments to all youths of Pacific Islands to the age of 17." The author advocates neo-arsphenamine which can be bought at one penny per decigram. Three doses were at first given ; but later two were believed to be equally effective. 17,020 had first treatment, a total of 42,447 injections.

Ringworm affects large percentages of the population of Fiji. The yaws unit tested the efficacy of a saturated solution of salicylic acid in strong tincture of iodine, painted on the surface of the body, face and shaven scalp ; not more than half to one-third of the body at one time and another section done in two days. 307 persons treated at a first survey were examined 6 months later ; 169 were cured. In many of the rest the infection was reduced to patches. The disease is not very contagious ; records of 38 couples married for many years showed only 7 instances in which both were infected.

A. G. B.

INDIA. **Annual Report of the Public Health Commissioner with the Government of India for 1927. Volume II.**—pp. ii+217. 1929. Calcutta : Govt. of India Central Publication Branch. [Rs. 2–4 or 4s. 3d.]

This volume deals with the health of the British Troops in India and the health of the Indian Army.

British Troops.—The average strength of officers and other ranks was 2,476 and 55,362. The chief causes of sickness were :—

	Officers.	*Men.*
Malaria	168	7,723
Bronchitis	101	891
Inflammation of Areolar Tissue	99	1,755
Tonsillitis	99	1,632
Diarrhoea	95	922
Sand-fly fever	81	1,429
Dysentery	48	877
Venereal disease	—	3,160

(" Inflammation of areolar tissue " was chiefly due to bites of mosquitoes and sandflies). There were 149 deaths among the men, 2·68 per mille of strength, the lowest death rate ever recorded.

The principal causes of invaliding to the United Kingdom were :—

Inflammation of middle ear	155
Pulmonary tuberculosis	73
Mental diseases	67
Epilepsy	46
Disordered action of the heart	40
Perforation of Membrana Tympani	32
Valvular disease of the heart	32
Neurasthenia	27
Malaria	20

[The prominent position in this list occupied by "inflammation of middle ear" (to which may probably be added the 32 "perforations of membrana tympani") may be due to the "tonsillitis" which is well up among the admission rates. Its origin is not discussed, but it headed the lists also in the two antecedent reports.]

Under dysentery we learn that "the change-over from amoebic to bacillary dysentery" is still going on, "the result of improved diagnosis."

	1924.	1925.	1926.	1927.
Amoebic dysentery	599	498	230	194
Bacillary dysentery	32	85	303	259
Group dysentery	38	142	359	424
Total	669	725	892	877

Out of a total of 34,666 admissions from all causes, 7,723 or nearly one-quarter were for malaria, showing a decrease of 1,666 cases on 1926. The decrease is largely due to energetic antimalarial measures, the most effective being "cold storage (withdrawal from malarious stations to the hills) and mosquito proofing." Other measures are fumigation of barracks (of great value), propaganda by film, anti-mosquito breeding measures, and mosquito nets. It is stated that "a still further decline in the incidence of malaria at Lahore has followed the mosquito proofing in 1925" of British barracks and hospital, thus :—

	Per 1,000.
1924	1,038·4
1925	706·2
1926	613·5
1927	255·3

Indian Army.—The principal causes of admissions to hospital were :—

Malaria	13,111
Minor septic diseases	3,634
Bronchitis	2,302
*Venereal disease	2,070
Dysentery	1,543
Pharyngitis	1,519
Diarrhoea	1,431
Pneumonia (lobar and lobular)	1,367
Influenza	1,220
Sand fly fever	1,006
Conjunctivitis	941
Tonsillitis	535

The main causes of death were :—

Pneumonia	190
Injuries	78
Influenza	18
Malaria	17
Pulmonary tuberculosis	15
Dysentery	11

and the chief causes of invaliding :—

Pulmonary tuberculosis	343
Injuries	149
Diseases of ear and nose	136
Diseases of the eye	101

* Gonorrhoea 1,010, syphilis 677, soft chancre 383.

It is suggested that the provision of mattresses would tend to diminish the incidence of bronchitis.

Malaria caused 3,111 admissions or 27·2 per cent. of the total. Its incidence has shown a steady fall since 1920, which may be partly due to a series of favourable seasons.

Pneumonia accounted for 1,367 admissions, and 190 deaths. A table shows a steady improvement since 1920, the ratio of admissions per 1,000 being then 17·4 and now 10·3, and the ratio of deaths 3·85 and 1·43 respectively. "The improvement may fairly be ascribed to the steadily improving conditions under which the Indian sepoy is housed."

The figures for pulmonary tuberculosis have similarly improved, but the loss by invaliding is great.

A. G. B.

VON KÜHLEWEIN (M.). **Report of a Journey to Upper Mahakam (Borneo), February-May, 1929.**—*Meded. Dienst d. Volksgezondheid in Nederl.-Indië.* 1930. Vol. 19. Pt. 1. pp. 66–152. With 10 maps, 22 diagrams (3 coloured), 1 text fig. & 19 figs. on 10 plates.

In consequence of a report that the Dajak population in the sub-division Upper Mahakam (Borneo) was steadily decreasing the author was sent there in 1929 to investigate the hygienic conditions and to discover the reasons for increased mortality if such existed. In this long paper abounding in maps, photographs, diagrams and tables he gives the results of his enquiries. The area is one of 21,000 sq. kilos, and the population at the last census was 8,561; the district is therefore lightly peopled. Almost the whole division is covered with dense primaeval forest, and the people live on the banks of the Mahakam, a river "as long as the Rhine." The housing, food, sex life, religion are described in turn. Of the inhabitants, 89 per cent. presented themselves for examination. The following were the medical observations :—

Malaria is endemic in a benign chronic form. There is no malarial anaemia. All three parasites were found. *A. leucosphyrus* and *A. umbrosus* are the probable vectors. Yaws and hookworm infection are slight. Dysentery is believed to be common and to influence unfavourably the infantile mortality. Goitre is widely spread. Leprosy and tuberculosis are sporadic and unimportant. Tinea imbricata is very common. There is a small amount of trachoma. Syphilis was not seen. Gonorrhoea was found in one district, but in no great prevalence. Blindness in consequence of gonorrhoea is rare. Smallpox is absent, but the people are well vaccinated. His general conclusions (abridged) are as follows :—

"The Dajak population of the sub-division Upper Mahakam decreased in number during the period 1918–1927. After that an increase took place. The *decline* of the population should be ascribed (1) to serious epidemics of influenza and of dysentery before 1927; and (2) to an unfavourable biological condition.

"The *health conditions* in general are since 1927 not unfavourable. For a tropical country they appeared to be even satisfactory during the period of the investigation.

"The *unfavourable biological condition* is due to: (1) shifting of the sex-proportion in favour of the male sex; (2) the great number of sterile women, the sterility being not due to disease; (3) the great number of women, having given birth to only one child, without this being due to disease;

(4) the low number of births, not to be ascribed to disease; (5) the still lower absolute upgrowth-figure.*

"Nothing can be done against the decline in consequence of the unfavourable biological condition, nor will marriages of Dajak women with Malay men be of any help.

"In order to retard as much as possible the rate of the inevitable decline it is necessary: (1) to prevent the appearance of new epidemics, by improvement of the existing very unfavourable hygienic conditions, together with other prophylactic measures; (2) to station a physician in Upper Mahakam for combating diseases, for carrying out the above mentioned improvements and for starting an intensive public health education of the people; (3) to double at least the number of existing schools, in order to teach the people the principles of hygiene and to carry them on a higher level of civilisation."

A. G. B.

STRAUB (M.). Kindersterfte als biologisch verschijnsel en het bevolkings-vraagstuk ter Oostkust van Sumatra. [**Infant Mortality as a Biological Phenomenon and the Population Problem on the East Coast of Sumatra.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1930. Jan. 1. Vol. 70. No. 1. pp. 3–46. With 4 text figs. [Refs. in footnotes.]

In his previous attempt to explain and combat the high infant mortality in the Javanese labourers' families on the East Coast of Sumatra (see *Bulletin of Hygiene*, Vol. 3, p. 921) the author came to the conclusion that, apart from exogenous influences on this mortality rate, there exists a certain inferiority of resistance of the Javanese child against various diseases, which for example, finds its expression in its extraordinary inclination to FINKELSTEIN's intoxication†. As the cause of this congenital inferiority he considered the comparatively low physical condition of the mothers, especially in regard to the vitamin content of their diet. Infant mortality was highest where the average weight of the newborn Javanese child was low. During the first year of life the mortality was lower in children of mothers who had received antenatal hospital attendance.

Founding his views upon PEARL's studies (Studies in human biology; The biology of death; The biology of population growth) Straub makes a comparison between the prodigal way of breeding (high birth rate with high infant mortality) and the economic way (low birth rate, but still lower infant mortality). Along both paths growth of the population may be expected and both ways are governed by biological influences, which are discussed at some length in a way which cannot be summarized here.

Notwithstanding the prodigal way of breeding prevailing at present in the coolie population on the East Coast of Sumatra, the conditions are given for a satisfactory growth; it constitutes a good "germinating centre." This conclusion is of much importance for the future of the

* By upgrowth is meant the total of children that have attained the age of 15 years.

† The most important cause of death during the first three months of life is an anhydraemia, the toxic symptom-complex of Finkelstein, which, in European experience, is usually only seen in hand-fed infants. In some cases there was a parenteral infection, but in many no discoverable factor. Thus, of 92 deaths of children under three months of age investigated in the Medan hospitals 1925–27, as many as 36 were referred to anhydraemia without objective cause. (*Bulletin of Hygiene*, 1928, v. 3, 922.)

agricultural companies in Sumatra, whose aim should be to obtain by immigration a settled Javanese population, from which they can recruit their labourers.

The high infant mortality rate is a biological phenomenon, which is not to be combated by individual care of the babies, but which will be influenced favourably by general biological, hygienic, social and economic factors acting on the population as a whole. "Child mortality is one of the elements influencing the growth of populations. The latter as such, however, is determined chiefly by the available sources of prosperity, not by medicine or hygiene."

W. J. Bais.

Surbek (K. E.). Aus 10 Jahren Tropenpraxis. [**Ten Years Practice in the Tropics.**]—*Schweiz. Med. Woch.* 1930. Aug. 16. No. 33. pp. 778–781.

The tropics here is Sumatra, of whose diseases a discursive account is given without numerical data. The author makes a short reference to "Quartana Nephrosis infantum" defined as a subacute nephrosis causing deep oedema, attacking children and adolescents, and caused by quartan malaria. It appears that bronchial asthma is a common affection among Malays and Javanese. It is ten times as frequent in men as in women. The Malays suffer also from bradycardia, low blood pressure and a plasticity of skeletal muscles, evidenced by local contraction lasting half a minute after pinching or similar stimulation.

A. G. B.

Found (Norman). **Laboratory Work in Korean Mission Hospitals.**—*China Med. Jl.* 1930. July. Vol. 44. No. 7. pp. 675–678. [4 refs.]

The author, who is in charge of the Department of Pathology, Severance Union Medical College, made enquiries about the laboratory work done in ten mission institutions outside Seoul and tabulates it for five laboratories. He makes the following observations: Lung disease due to tubercle and "distoma" is widely distributed. 4–5 per cent. of the people are tuberculous. Diphtheria is very prevalent in the capital, malaria rare (19 cases in a year). In Seoul Trichuris infestation is almost universal. Ascaris in all parts of the country infests 38–62 per cent. Hookworm is common, 45 per cent. at Seoul, but out of 215 hookworm-containing stools only 19 harboured more than 10 worms (counts on hospitalized patients). *Trichostrongylus orientalis* is also very common and possibly is confused with hookworm [see this *Bulletin*, Vol. 27, p. 439.]

A. G. B.

Besson (Andrée). Le centenaire de l'Algérie au point de vue de la médecine de l'assistance et de l'hygiène. [**The Centenary of Algeria in respect of Medicine, Public Assistance and Hygiene.**]—*Ann. d'Hyg. Pub. Indust. & Sociale.* 1930. May. Vol. 8. No. 5. pp. 265–287. [Refs. in footnotes.]

In this year (1930) France is celebrating the centenary of Algeria, and the present article gives an account of the advances made there in medical science and its applications. Sections deal with: (1) Algeria before 1830; (2) the French conquest; (3) the difficulties of coloniza-

tion up to 1870; and (4) colonization from 1870 to 1900, and in the present century. A picture is given of preconquest Algeria by the quoted statement—Where there is no water one dies of thirst: where there is water one dies of fever. We are told that MAILLOT by the use of sulphate of quinine, recently discovered, improved greatly the health of the army of occupation and enabled it to complete its task. A few figures from the vital statistics of Boufarik in the 40's give an idea of the difficulties of the first colonists.

The two important scientific events between 1870 and 1900 were the discovery by LAVERAN of the microscopic agent of malaria, 1880 [given by error as 1860] and the foundation in 1894 of the Pasteur Institute of Algeria. In 1900 the Institute organized a mission for the study of malaria, named in 1904 the Algerian antimalarial service, of the activities of which many accounts have appeared in this *Bulletin*. A description is given of the work of the Institute [with this questionable statement of infantile leishmaniasis: "l'on découvrit qu'elle est due à la transmission de l'infection canine par les puces."] The advances in knowledge of the various diseases are described. The results are summed up in the statement that the mortality of the Europeans, which was 28 per mille in 1890, had fallen in 1910 to 17 per mille [later figures are not given]. The European birth rate is given as 24 per mille.

A. G. B.

ATKEY (O. F. H.). **Sanitary Problems in the Gezira Irrigated Area.**—*Kenya & East African Med. Jl.* 1930. June. Vol. 7. No. 3. pp. 61–77.

The Gezira plain is bounded on the east and west by the Blue and White Niles which converge to the north till they join at Khartoum; southward the railway between Sennar and Kosti may be considered the boundary. It comprises an area of 5 million acres and the part under irrigation is half a million acres. The plain is almost level so that drainage is difficult; the soil is loam and clay which holds up the water, making transport very difficult at the height of the rains. The rains fall from the beginning of July to the end of September; malaria becomes epidemic in August and dies down in the non-irrigated area in November-December. The original population was mainly Arab, and was almost entirely dependent on the dura grown during the rains. If the rains were good, malaria was severe and the crop was difficult to get in. The pasturage was so scanty that there was little livestock. Milk was scarce and meat rarely eaten. Green food was absent except in the rains when milk and green food became available. The villagers were under-nourished, and of poor physique. The settled Arab population appears to be now about 70,000; the immigrant natives number about 42,000; these are difficult to control, having no tribal organization and a low standard of life. The change in social conditions since irrigation was started is very great. The dietary is now liberal and varied, milk is plentiful, meat generally eaten, tea and sugar consumed in large quantities, houses improved.

An account is given of the irrigation scheme. The land was taken over from the tenants who receive 40 per cent. of the profits and provide the labour. The cotton crop is sown in July and is watered some 14 times between this and April 15th. The interval, 15 days, allows of the complete drying off of the field channels, "the most essential antimalaria measure during the dry season."

The sanitary organization of the irrigated area is described. It is divided into blocks averaging from 15,000 to 22,000 acres, each block being under a Block Inspector who is responsible for seeing that routine antimalarial measures are carried out. The Medical Inspector's work is confined to inspecting, reporting and emergency oiling. Every tenant and labourer is within easy reach of a dispensary where he can obtain free treatment for himself and family.

Malaria.—The Gezira has always been subject to epidemic malaria in the rains owing to its flatness, want of natural drainage and impermeability of soil. These seasonal epidemics are affected by irrigation both for good and bad in ways described. They are dealt with by distribution of quinine, and of mosquito-nets (against payment), antilarval measures when the country dries up, mosquito-proofing of houses of officials, establishment of surface drainage (commenced); the last is the essential factor.

Previous to irrigation there was no transmission of malaria after the end of the year; now malarial infection, unless it is prevented, is continuous. During the dry season it is sought to keep the irrigated area mosquito-free by: (1) careful drying out of the field channels between waterings; (2) cleaning to keep them free of weeds; (3) prevention of seepage; (4) prompt treatment of malarial cases. The essential in the control of dry season malaria is the establishment of a system of drains to drain off promptly the excess of water in the rainy season. The author states that increased prosperity of the people and liberal distribution of quinine have not proved sufficient to prevent the serious disabling effects of malaria. Antimosquito measures are essential.

Bilharziasis. Before irrigation this was practically an uninfected area, but it was seen that the introduction of infected snails would lead to a serious position. The measures taken to safeguard the irrigated area were: (1) quarantine at Wadi Halfa, and on the White Nile of labour imported from Egypt and Kordofan; (2) antibilharzial work in the endemic areas of the Sudan; (3) prevention of bathing and passage of excreta in the irrigated area; (4) propaganda; (5) destruction of snails in the non-watering period; (6) treatment of all infected cases. These measures are discussed. The non-watering period lasts from mid April to mid July. During this about half the canals are dried and dug out for irrigation purposes; the remainder are partly emptied and sizolin is added to form a mixture of 1 in 20,000; after 48 hours the snails cannot be revived; the water remains drinkable. The examination of large numbers of natives in 1926 and 1928 shows that infection is present—in 1928, 37 children from 22 villages were infected—but it appears that the measures taken are reasonably effective.

There has been no trouble with hookworm or kala azar.

A. G. B.

McCarthy (D. D.). **Medical Notes from Weti, Pemba.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1930. Jan. 30. Vol. 23. No. 4. pp. 401–412.

Pemba, the second island of the Zanzibar Protectorate, is described with a brief account of the climate; the Weti district is the northern third.

Ankylostomiasis. Clinical ankylostomiasis is recognized by the usual symptoms combined with the presence of ova in the stools. It was noticed that some patients responded promptly to oil of chenopodium

while others did not. An estimate was therefore made, by Stoll's method, of the number of ova per gm. and it was found that with up to 5,000 ova per gm. symptoms were absent, whereas with symptoms present the excretion was on the average 10,000 ova per gm. Of a series of anaemic patients those with heavy ova infection were given full hospital diet, an iron and arsenic tonic, and oil of chenopodium, 3 doses at weekly intervals ; those with light infections received only the hospital diet, supplemented by eggs, milk, green vegetables, fruit and marmite. The total number (30) was too small for definite results, but in the author's belief clinical ankylostomiasis in Pemba is due only in part to the disease and in part to some other factor, which may be a deficient diet.

Malaria is a common disease, ranking with filariasis and ankylostomiasis. Of 58 town children, 19 showed parasites, and of 18 country children 7. *A. costalis* was the common anopheline in houses ; *A. funestus* and *A. maculipennis* was also found.

Rats and Fleas. Rats were caught in godowns, clove sheds and bakeries, a few only in houses. Of 176, 20 were *Epimys norvegicus* and 156 *Rattus rattus.* Of 571 fleas all but one *Xenopsylla cheopis* were *X. braziliensis.* The author notes that in Zanzibar *cheopis* constitutes over half the total number of rat fleas.

Schistosomiasis. Of 127 persons, without symptoms, examined, 46 showed ova of *S. haematobium.* In 19 over the age of 35 years, the frequency fell off. A systematic search was made for the molluscan host. A species of Isadora occurred in shallow marshy pools, generally on the under side of the leaves of a water lily ; in 390 dissections of these 7 (or 1·79 per cent.) showed cercariae. The author notes the wide prevalence of the disease, the rarity of complaint, and the apparent loss of the infection with advancing years. He believes that any attempts at mass treatment would be futile, and attack on the snail costly and probably useless, and advises propaganda—popular lectures and demonstrations by trained natives.

Filariasis. Of 156 night blood films from adults 35 showed microfilariae ; and a rather smaller proportion from children averaging 9 years [but the blood was taken at 7·30 p.m.]. Cases of clinical filariasis and elephantiasis are comparatively uncommon [no figures given]. Dissection of Culex, Aedes and Anopheles spp. showed positives in all, chiefly in Culex (apparently *fatigans*). A few details are given of Ascaris and Trichuris infestations, the former in 15 of 76 children, the latter " almost universal." [A much more informative paper than one usually finds under the heading Medical Notes.]

A. G. B.

CROVERI (Paolo). Contributo alla conoscenza della nosografia umana ed animale della Somalia Italiana. (Specialmente nella zona di Merca.) [**Disease in Man and Animals in Italian Somaliland, particularly in the Merca District.**]—*Arch. Ital. Sci. Med. Colon.* 1930. Mar. 1. Vol. 11. No. 3. pp. 129–155. English summary (3 lines) p. 156. [Inst. of Trop. Path., Univ., Bologna.]

The author gives a brief account—it amounts to little more than a catalogue—of the chief human and veterinary conditions met with. He divides the report into six parts. Of protozoal diseases he mentions syphilis and relapsing fever which are very common ; yaws he has not

seen. All three species of malaria parasite occur ; in the cases observed there were 43·9 per cent. *Pl. vivax*, 29·3 per cent., *Pl. falciparum*, and 26·8 per cent. *Pl. malariae*. Human trypanosomiasis does not occur, *Glossina palpalis* and *G. morsitans* are absent, all the tsetses found being *G. pallidipes*. Five forms of pathogenic trypanosomes are met with : *T. congolense, T. brucei, T. pecorum, T. evansi* (in dromedaries particularly) and *T. vivax*. Part II refers to bacterial infections. During the five years he was at Merca, the author saw no cases of human tuberculosis, and bovine was very rare. There are a few cases of leprosy. He never met with a case of typhoid fever. The rest may be briefly summarized. Two cases of mycetoma and a few of Trichophyton ; *Sch. haematobium, T. saginata* and *H. nana* in man, *Filaria papillosa* in the horse, *F. immitis* in the dog are the chief helminthic infestations. Hookworm is not mentioned. Finally, of deficiency diseases one case of dry beriberi was seen.

H. H. S.

FREYD (Alexandre). Pathologie d'Amazonie peruvienne. [**Pathology of the Peruvian Amazon.**]—*Rev. Méd. et Hyg. Trop.* 1930. July–Aug. Vol. 22. No. 4. pp. 145–188. With 16 figs. (3 maps). [1 ref.]

At the invitation of the government of Peru the Polish government sent a mission to study the climatic and economic conditions of a tract in the Ucayali basin thought to be suitable for Polish emigration. The author was the medical member. The mission went up the Amazon to Iquitos, where it remained for a month, and then in a monitor traversed the length of the Ucayali river (2,000 kilos). The author then went up the Tambo river, a tributary of the Ucayali, by canoe, crossed the Andes to the coast and so home after an absence of 7 months. He brought back some hundreds of blood smears which were examined at the Institut de Médecine Coloniale in Paris. The diseases met with are considered in turn, but few numerical data are given.

Yaws was recognized for the first time in Peru by ESCOMEL in 1912. Now, along the rivers named, this disease with hookworm forms the greatest plague of the population ; 80 per cent. of yaws patients are children and adolescents. Iquitos is the chief centre. The author found novarsenobenzol promptly effective ; the action of bismuth was slow and mercurial salts were useless.

Parasites of the Alimentary Canal. Of 130 stool examinations, one only was negative for ankylostomes. Other common helminth eggs were also met with and probably larvae of Strongyloides.

Malaria. Certain places mainly on the Lower Ucayali were attacked ; others on the upper river, where the concession lies, were free. The parasite found was almost invariably *P. vivax*, but *P. falciparum* was found in soldiers who came from the frontier of Ecuador. Of 832 adult spleens palpated 81 were enlarged, and of 416 in children under eight 56 (=13 per cent.).

Leprosy. Leprosy was noted in Peru, in Brazilian immigrants, 30 years ago. There are believed to be 400 lepers in this part of Peru, but not it is stated, in the future Polish concession ; only 46 are interned.

Amoebic dysentery. Under this heading it is stated that periodical attacks decimate the population [but no mention is made of finding of entamoebae.]

Beriberi. Cases were seen at Iquitos.

Leishmaniasis. The American form is met with fairly frequently. The parasite was thrice identified in recent ulcers. The author notes that the word " uta " means a chronic ulcer of the skin and " espundia " a similar ulcer of the mucosa. Under these designations there were brought to him cases of leishmaniasis, phagedenic ulcer and ulcers of yaws, leprosy and syphilis.

Carate. Parasitic skin diseases were common. The information is too generalized for summary.

Other matter touched on are pterygium which in some villages affects 10–25 per cent., mountain sickness (soroché), jigger flea, harvest bug and vampire bats, which on the Tambo drive the natives to their mosquito nets.

In the conclusions it is stated that the infectious diseases are all on the lower Ucayali river, and that almost all diseased patients seen in the concession came from there. It will therefore be necessary to restrict communication with the lower river, and to draw labour exclusively from the upper reaches. The future route to the concession will be by road across the Andes, but for the present, the Amazon must be used.

[It may be suggested that malaria is likely to be the chief hygienic obstacle to the success of Polish colonization of this region and that it might be wise to make further enquiry into distribution of malaria and anopheles].

A. G. B.

Ganora (Romualdo). Notizie sulla climatologia e nosografia dello Jemen (Arabia Felice) e su di un'epidemia di febbre ricorrente. [**Climate and Disease in Yemen. An Epidemic of Relapsing Fever.**] —*Arch. Ital. Sci. Med. Colon.* 1930. Aug. 1. Vol. 11. No. 8. pp. 475–479. English summary (3 lines).

In Yemen generally malaria, enteric and smallpox occur, and in Tehama malignant tertian is common and also amoebic dysentery and undulant fever [no figures are stated]; leprosy is also met with and eye diseases are common, nearly half being trachoma. In Sana there was an epidemic of relapsing fever in the last three months of 1929, and in many of the lice examined, spirochaetes were found by Professor Franchini. Some 500 patients received hospital treatment; the fatality rate was high, 25 per cent.

H. H. S.

Cook (Cecil). **The White Settler in Tropical Australia.**—*Jl. Med. Assoc. South Africa.* 1930. Apr. 26. Vol. 4. No. 8. pp. 228–230.

The author is of opinion that too much importance has been attached to standards of temperature and humidity based upon experiments under special conditions as criteria of open air working conditions in the tropics. He cites some observations leading to the conclusion that strenuous work could be safely carried out under atmospheric conditions which, judged by the conventional standards, would be very bad. Evidence is adduced that neither in respect of infant mortality nor of weight at birth did the experience of the North Australian Medical

Service suggest "any real basis for the common belief that tropical climatic conditions adversely affect mother and child." He thinks that the general mortality rate is favourable. [As, however, the data are very scanty and the age distribution of adults over 20 is not provided, statistical inferences cannot be deemed trustworthy.] At the same time, numerous hygienic problems remain to be solved. Ankylostomiasis, filariasis and leprosy introduced into tropical Queensland by the importation of coloured labourers have become endemic and are a source of morbidity and expense. The full-time medical service introduced in 1928 is now at work, and the activities of the service are briefly described.

M. Greenwood.

LING (W. P.). **Ocular Findings in Some Infectious Diseases (Typhus, Typhoid, Dysentery, Kala-Azar, and Pellagra) : a Critical Review of the Literature and Some Observations among the Chinese.**—*Nat. Med. Jl. China.* 1929. Oct. Vol. 15. No. 5. pp. 632–684. [183 refs.] [Peiping Union Med. College, Peking.]

A comprehensive account of its subject which, with its numerous references arranged under diseases, cannot fail to be useful. The first 26 pages are occupied with the "literature," the rest with the findings at Peiping and conclusions. The following extract seems worth reproduction.

"If possible, in all cases where the question of an etiological relationship between an ocular and a general disease is involved, emphasis should be laid on demonstrating the presence of the causative agent or its toxin in the eye. For example, if ameba is suspected as the cause of an ocular lesion, the claim is not acceptable until the organism can be shown in the eye with the proof that its presence is not by accident. In cases of conjunctival diseases of infectious nature the organism must be found not in the discharge, but in the living epithelial cells of the lid and bulbar conjunctiva. This is absolutely necessary in view of the discovery of LINDNER (*Arch. f. Ophth.*, 1921, 105, 726) who has convincingly shown that in conjunctival inflammations of infectious nature only those organisms which are found in the living epithelial cells are of importance from the standpoint of pathogenicity. Those organisms which are found in the dead cells and in the secretion are saprophytes and are insignificant from the standpoint of pathogenicity.

"It is further necessary, especially in intraocular inflammations, to demonstrate the presence of the causative agent in the blood circulation during the appearance of the complication. For example, if typhoid bacilli are blamed for producing a particular uveal tract disease the etiological question can hardly be answered until the organism or its toxin can be found in the local lesions, and in the circulating blood.

"Again, many other etiological factors must be excluded which may equally well account for the ocular disease in question. In a country like China, it is especially necessary to exclude two widespread diseases, namely, tuberculosis and syphilis.

"If due consideration is not given to all these important factors, any cases studied are of little value.

"In animal experiments the same kind of caution is necessary.

"Finally in all cases the question should be considered as to how far acute infectious diseases are instrumental in the 'flaring up' of an old chronic general infectious disease which can thereby attack the eye. Unless we understand this possibility and bear it in mind, wrong conclusions may be made."

A. G. B.

White (J. Duncan). **Bone Lesions in Tropical Diseases.**—*Proc. Roy. Soc. Med.* 1929. Oct. Vol. 22. No. 12. pp. 1541–1546 (Sect. Electro-Therap. pp. 43–48). With 6 text figs. [4 refs.]

An address by the radiologist of the Tropical Diseases Hospital, London. He refers to the bone lesions in yaws and goundou, big heel, ainhum, leprosy, and gives skiagrams of some of these conditions.

A. G. B.

Kanagarayer (K.). **Some Observations on Differential Diagnosis in the Tropics.**—*Malayan Med. Jl.* 1930. Mar. Vol. 5. No. 1. pp. 36–38.

A clinical paper worth perusal. The diseases discussed are, malaria, fevers of enteric group and of dengue group, leptospiral fevers, tropical typhus, funiculitis, dysenteries and diarrhoea and, shortly, visceral abscesses and helminthiasis.

A. G. B.

Daukes (S. H.). **The Interrelationship between the Hygiene of Tropical and Temperate Climates.**—*Jl. Trop. Med. & Hyg.* 1930. Feb. 1. Vol. 33. No. 3. pp. 35–40. [26 refs.]

A most interesting account of this interrelationship. Since, however, it is the temperate hygienist who has to learn from the tropical rather than the reverse the paper loses in value by publication in a journal which will not be seen by the former.

A. G. B.

Piéry & Milhaud. Indications et choix d'une cure climatique dans les maladies des pays chauds. [**Choice of a Climatic Cure in Tropical Diseases.**]—*Rev. Prat. Malad. des Pays Chauds.* 1930. Mar. Vol. 10. No. 3. pp. 103–106.

Brief discussion as to which of the numerous French spas is most suitable for patients from warm countries, who are classed under three heads.

A. G. B.

Gabbi (U.) & Mariotti-Bianchi. Per una scuola di patologia ed igiene coloniale a Roma. [**A School of Pathology and Colonial Hygiene at Rome.**]—*Giorn. di Clin. Med.* 1929. Oct. 30. Vol. 10. No. 15. pp. 1035–1036, 1039–1042, 1045–1046.

The authors, Vice-Presidents of the National Congress of the Italian Society of Tropical Medicine and Hygiene, put forward a plea for the establishment of a school on the lines of those of London, Liverpool, and elsewhere, for the study of tropical medicine, hygiene and allied subjects. After stating the subjects which would be taught, and the buildings necessary, including a hospital, they consider what would be the best locality and decide on Rome for the following reasons: That it is the chief centre of activity of the country, there is a University there and an Institute and laboratory of Hygiene and Preventive Medicine, a school for Malariology, the Rockefeller laboratory, and the fascist Colonial Institute.

H. H. S.

Taylor (K. P. A.). **Cement-Starch Mixtures as a Substitute for Plaster of Paris in the Tropics.**—*Eighteenth Ann. Rep. Med. Dept. United Fruit Company, Boston, Mass.* 1929. pp. 247–250. With 1 text fig. [3 refs.] [Chiriqui Land Co. Hosp., Puerto Armuelles, Panama.]

Unused plaster of Paris deteriorates rapidly in the moist tropics. The plaster becomes coarsely lumpy or mixed with hard irregular granules, which are unaffected by immersion. Some grades undergo this change without exposure. Certain French preparations of plaster marketed in 500 gram sealed tins are free from these objections, but import duties render them expensive. The author has found that mixtures of Portland cement with starch form an efficient substitute.

"For most purposes, a mixture of equal parts by volume of Portland cement and laundry starch will prove satisfactory. These materials are freshly mixed, triturated if lumpy, spread thickly on a gauze bandage, rubbed smooth, and loosely rolled. The bandages are placed in warm water (salt is omitted), gently compressed to insure exit of air bubbles, and applied exactly as are plaster bandages. Cement-starch powder and water are thoroughly rubbed into the growing cast. The finished model is smoothed and polished with starch-and-water paste. Casts for the arm or leg should be at least 1 cm. thick after rubbing; and for the body, thigh and hip, they should be proportionately heavier.

"For a light-weight cast, subjected to little strain, the mixture may be made of 2 parts by volume of starch to 1 part of Portland cement; while for a heavy weight cast, which may be subjected to considerable tension, the proportion may be reversed.

"These casts generally require from 24 to 36 hours to become thoroughly dry and hard. New types of quick-hardening cement materially reduce the time of 'setting.' During this period, immobility must be assured by co-operation of the patient. Drying may be hastened by the application of hotwater bottles to the cast, by exposure to sun or light, by hair-drying apparatus, or by utilizing one or more 200 c.p. electric bulbs."

The cement-starch cast is less expensive than the plaster cast.

A. G. B.

Harvey (W. F.). **Some Experiments on Radiant Energy as a Lethal Agent.**—*Indian Jl. Med. Res.* 1929. Oct. Vol. 17. No. 2. pp. 507–517. With 6 figs. on 1 plate. [Central Research Inst., Kasauli, & Roy. College of Physicians, Edinburgh.] [Summary appears also in *Bulletin of Hygiene.*]

The author reports a number of investigations concerned with the utilization of sun heat for sterilization, and with problems of protection against heat stroke. The experiments were carried out at Kasauli, at an altitude of 6,000 feet.

Government meteorological data from Lahore have shown that the sun temperature there remains from April to September at about 70° C., a temperature lethal to micro-organisms, while the average shade temperature during this period is an incubation temperature for micro-organisms; the average shade temperature in May and June is higher than normal human body temperature. The author's experiments demonstrated that a maximum heating effect of the sun's rays occurred on a black surface, so that if the rays were utilized for the

sterilization of water, the storage tank should be of that colour, and conversely when protection from heating effects is desired, the tank should be white.

It was found that a suspension of typhoid bacilli became sterile within an hour after its exposure to a hot sun, during which time the temperature had reached 53° C. The practical significance of the experiment is apparent. The case of milk is less simple, for milk is an albuminous fluid and a good medium for bacterial growth.

Certain animals were subjected to trials directed at the determination of the affects of dry and humid heat ; it was found that cold-blooded animals such as flies and frogs survived longer in a humid atmosphere, while the sparrow and rat succumbed more quickly under conditions of high humidity. Some histological findings are illustrated showing that the organs of rats killed by heat stroke were in a generally congested state, with oedema of the brain and neuronolysis in the spinal cord. These changes were greater in the case of exposure to moist than dry heat.

Protection from heat is given by the use of white clothing which reflects and refracts the sun's radiant energy. Continued movement of the air over the skin is protective from sun burning, but even in a still atmosphere some reduction of temperature can be attained by the use of sprinkled water, which need not be cool. It is pointed out that for protection against sun burning there should be proper fore and aft ventilation of the head gear, with cross-bands to prevent the direct contact of the top of the helmet with the scalp.

R. G. Bannerman.

Scott (H. Harold). **Tuberculosis in the Tropics.**—*Brit. Jl. Tuberculosis.* 1929. Oct. Vol. 23. No. 4. pp. 179–189. [21 refs.] [Summary appears also in *Bulletin of Hygiene.*]

This brief summary of an important subject sets forth the main facts and places before the reader a clear conception of how tuberculosis starts and spreads in primitive communities.

" First of all comes the introduction of the bacillus into ' virgin soil,' a much abused and sometimes misunderstood term in regard to this disease . . . ; thereafter, the mode of life, habits or change of habits, industrialism, overcrowding, and general want of hygiene foster its spread."

" In large native communities near centres of industry carried on by Europeans tuberculosis becomes a very grave menace. The unceasing and increasing commerce and industry lead to greater and closer intermingling of the races. Those natives who acquire a massive infection die off rapidly, others return to their home villages carrying with them the virus which is destined to exercise its fatal effect in the family circle, which in turn becomes a fresh focus of dissemination."

The author discusses these questions from the point of one who has been in close touch with natives and whose knowledge of tuberculosis is based not only on clinical but on extensive post-mortem observations and his paper will repay close study.

" Part of our duty in bearing the white man's burden " he concludes, " is to relieve some of that which we have ourselves imposed, and to conserve the health of natives who are brought into association with us in the course of industrial, educational and other developments."

S. L. Cummins.

Beihefte zum Archiv für Schiffs- und Tropen-Hygiene. 1929. Vol. 33. No. 2. pp. 5–40 [49–84]. With 6 graphs (1 map). Die Verbreitung und Behandlung der Tuberkulose in ueberseeischen Ländern. Die Verbreitung der Tuberkulose in Südamerika, Süd- und Ostasien. [**The Prevalence of Tuberculosis in South America, South and East Asia.**] [Roesle (E.).] Die Behandlung der Tuberkulose in ueberseeischen Ländern. [**The Treatment of Tuberculosis in Foreign Countries.**] [Wolff-Eisner (A.).]

This work is divided into two main parts. The first dealing with the prevalence of tuberculosis in countries abroad, excluding purposely Europe and the United States of America, occupies three-fourths of the whole and is largely statistical, the figures having been collected from sources as reliable as possible by Dr. Roesle of Berlin. The second, which is concerned with the treatment of the disease, is contributed by Professor Wolff-Eisner. The latter is brief and is merely a plea in general terms for the more extensive use of tuberculin.

Dr. Roesle considers in turn the prevalence of tuberculosis in South America, Chile, Uruguay and the Argentine, at first generally and then in more detail as regards the chief towns, Rio de Janeiro, São Paulo and Buenos Aires. It is only in the large towns that anything approximating reliable statistics is obtainable. He presents in tabular form the census figures and the numbers per annum dying from tuberculosis of all organs per 10,000 in 1910–12 and from 1925–28 in each of the Mid and South American States, including Cuba in the former, Dutch Guiana, Colombia, Ecuador and Peru in the latter, in addition to those already mentioned. In Buenos Aires, Rio de Janeiro and São Paulo, statistics show that the mortality from tuberculosis has declined fairly steadily during the last 40–50 years ; it must not be forgotten, however, that the figures, in the earlier years at least, are far from reliable, but they do not on that account lose all value when compared *inter se*. Thus, on comparing 1900, 1910 and 1925, as is shown by a table, the decrease is steady in nearly all the 39 States named, notable exceptions being Manãós in the Amazonas where the deaths per 10,000 have increased from 14·0 in 1903 to 21·8 in 1910–11, and to 26·7 in 1926 ; San Salvador (Bahia) from 21·3 to 33·6 and 35·4 in the same years ; and Montevideo from 18·4 in 1900 to 24·6 in 1910–11, and 25·1 in 1926.

India next comes under consideration. In the Annual Report of the Director of Public Health for the Bombay Presidency for 1923 the number is stated to be 8·4 per 10,000—15·9 for the towns, 6·6 for rural districts. Figures are given for several large towns for the years 1922 to 1927 inclusive ; those for Calcutta are nearly double those for Bombay, and those for Madras nearly treble. In fact, Madras heads the list, the number having risen from 19·5 for pulmonary tuberculosis per 10,000 in 1922 to 30·5 in 1927.

The prevalence in China is difficult to determine since it is only in European towns such as Hongkong and Shanghai that statistics of any value are obtainable. In Hongkong from 1905–9 the average mortality from tuberculosis was 22 per 10,000. It rose in 1922 to 33, when this disease constituted 14 per cent. of all causes of death. In Japan, the figures given for the whole empire were 25·3 in 1918, 19·4 in 1925, per 10,000 population, whereas in the large towns of over 50,000 inhabitants the corresponding figures were 39·0 and 26·1. The average for the period 1921–25 was 20·5 for Japan, the returns for Germany during the same period being 13·1 and for England and Wales 10·8.

More accurate statistics are obtainable from the Army returns of Japan, Germany, European and Native troops of British India, and the Dutch Indies, but these are too specialized to convey much information regarding the actual prevalence of the disease in thecountries concerned. From the British Army in India there were in 1925 nine admissions to hospital per

10,000 for pulmonary tuberculosis, 31 from the Native army, the corresponding figures for the Dutch Indies being 35 and 54. The general inference is drawn that the disease is rife among the native population whence the army is recruited. Some returns are given also for Persia and Turkey, but the figures are so low (3·4 per 10,000 in the latter) that they are almost without doubt incorrect. In Manila the tuberculosis death-rate is going up ; in 1913–15 it was 44·4, ten to twelve years later 56·1.

Tables of figures, charts and maps are presented, setting forth graphically the statistics on which the above statements are based—a standing testimony to the zeal and patience of the author. [It seems a strange omission, nevertheless, when writing on tuberculosis in foreign countries, to give no reference to Australia, New Zealand, South Africa, or any of the British Colonies (except Hongkong) from which equally, if not more, accurate statistics would have been obtainable with less difficulty.]

H. H. S.

Heinemann (H.), Koumans (A. K. J.) & Pirngadi (R.). Verslag der polikliniek voor behoeftige borstlijders te Medan over de jaren 1927–1928 en 1928–1929. [**Report on the Polyclinic for Lung Patients at Medan for the Years 1927-1928 and 1928-1929.**] —*Geneesk. Tijdschr. v. Nederl.-Indië.* 1930. Mar. 1. Vol. 70. No. 3. pp. 241–250.

These two years were the second and third during which the policlinic was held. The number of patients (523 during the first year) was in these two years respectively 710 and 522 (together 1,232). One hundred and thirty-four patients suffered from affections not within the scope of the policlinic, 691 suffered from various other diseases of the respiratory tract (bronchitis, pneumonia asthma, etc.) and 407 with certainty or probability from tuberculosis, either of the lungs or of other organs. Special classes of natives appear to be particularly exposed to the infection (employees of the Government Opium Monopoly, Chinese goldsmiths).

Roentgen examination was in some cases of paramount importance, especially in view of the early recognition of isolated exsudative foci.

The authors hold optimistic views as to the scope of treatment. Their methods are conservative ; they reject artificial pneumothorax in this out-patient treatment, but recommend carefully conducted respiratory exercise in treatment as well as prophylaxis. Further, their unspecific treatment consists of lime (lime water, calcium lactate, kalzan), silicum (Silistren), cod-liver oil, vitamin administration (lime juice, katjang idjoe), stimulation of the appetite (creosote, tinctura cinchonae), ultraviolet rays, salt restriction in the diet (Gerson, Sauerbruch). As a specific they employ Shiga's tuberculosis vaccine, of the results of which some strikingly successful cases are briefly quoted. Of course, treatment of other complicating diseases is necessary.

The authors emphasize the necessity of hospital accommodation for the serious cases which are important sources of infection in their villages. This they consider to be more urgent than the sanatorium treatment of lighter cases.

W. J. Bais.

Kleine (F. K.). Beobachtungen ueber Tuberkulose unter den Eingeborenen im Innern Ostafrikas. [**Tuberculosis among Natives in the Interior of East Africa.**]—*Deut. Med. Woch* 1930. Jan. 24. Vol. 56. No. 4. pp. 130–131. [Robert Koch Inst., Berlin.] [Summary appears also in *Bulletin of Hygiene.*]

After summarizing the views of other observers as to the marked susceptibility of African natives to tuberculosis, an observation which is based on the rapid course of the disease in natives exposed to infection

in Europe or in the course of industrial developments in Africa, Kleine describes his own experiences in the villages of the interior.

In Karewa, a district to the south of Lake Tanganyika, with 1,400 inhabitants, he was shown by Dr. ATIMAN of the White Fathers Mission, an elderly married but childless woman with pulmonary tuberculosis and a positive sputum. It appeared that she had suffered from the disease for at least three years. Her husband appeared healthy.

Other cases of a similar type were seen elsewhere. The actual number of cases diagnosed is very small; only five out of 9,000 clinical examinations over a period of five years at Sikonge; only four cases in several years of observation at Karewa.

At Urwira, Kleine carried out von Pirquet tuberculin tests on 103 adults and 51 children. He found 10 positives in adults and only one positive amongst the children, the latter in the 4-year old child of a tuberculous mother. He concludes :—

1. That in East Africa, so far as concerns the interior, the infection of tuberculosis is spread not during childhood but rather in adult life, at an age when individuals quit their districts to seek work elsewhere.
2. The disease most commonly runs a relatively benign course and may be recovered from if the natives are well fed and kept quietly at home.
3. There is no reason to fear an epidemic outbreak of tuberculosis in Central Africa. The tuberculization of the population is likely to proceed gradually.

[The observations of Dr. Kleine are very much in line with the as yet unpublished findings of members of the South African Tuberculosis Research Committee.]

S. L. Cummins.

GIROLAMO (Lionti). Sulla diffusione della tubercolosi nei Libici e negli Eritrei. [**The Spread of Tuberculosis in Lybia and Eritrea.**]—*Arch. Ital. Sci. Med. Colon.* 1929. Sept. 1. Vol. 10. No. 9. pp. 451–458. English summary p. 459. [Colonial Hosp., Benghazi.]

Statistics show that prior to 1910, tuberculosis in Eritrea was a comparative rarity. In the period 1889–99 only 4·44 per cent. of deaths in the military hospital at Massawa were due to it; in 1916–28 in the Colonial Hospital, Asmara, 29 per cent. died from pulmonary tuberculosis. In the quinquennium 1924–28 tuberculosis cases constituted 9·26 per cent. of patients in the Benghazi Hospital; the townspeople contributed 1·47, Lybians 11·2, Eritreans 21·79 per cent. of the total. Of 1,071 total deaths, 625 (58·35 per cent.) were due to tuberculosis; the Lybians accounted for only a little over 7 per cent. of these, whereas Eritreans and Somalis formed 89·12 per cent. The spread is very great among coloured troops coming from Eritrea to serve in Cirenaica, and the need for a special institution for dealing with these cases is strongly urged, and clearly on good grounds.

H. H. S.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE. 1930. Mar. Vol. 23. No. 5. pp. 733–745 (Sect. of Trop. Dis. & Sect. of Path. pp. 47–59). [11 refs.] **Discussion on Tropical Diseases arising from Dietetic Deficiency.** [MEGAW (J. W. B.), FINDLAY (G. M.), DAY (H. B.), BRAY (G. W.), CLARKE (Tertius), AYKROYD (W. R.), STANNUS (H. S.), BARTON (J. Kingston), CHRISTOPHERSON (J. B.), THEOBALD (G. W.).]

Major-General J. W. B. Megaw.—There are three types of food deficiency: (1) Shortage of food as a whole; (2) Shortage of proteins;

(3) Shortage of vitamins. The first is common to millions of people in the tropics who live always on the borderline of starvation. Medical workers must educate Governments and peoples to realize that the well being of a community rests upon production, controlled reproduction, disease prevention, and the maintenance of personal security. The second type is also extremely common, most people in the tropics suffering from shortage of protein supply. One might almost say—look after the proteins and the vitamins will look after themselves. Under the heading vitamin deficiency the speaker warns against the wide-spread assumption that avian polyneuritis and human beriberi are the same disease.

He is of the opinion that beriberi is not due to deficiency in vitamin B. Epidemic dropsy and beriberi cannot be dissociated, and the speaker has already given reasons why the former cannot be regarded as a pure deficiency disease. In short, beriberi must be regarded only as a term applied to a group of diseases.

Dr. G. M. Findlay.—Our knowledge of food deficiency has been gained by observations upon disease in human subjects and from feeding experiments on animals. Deficiency may be quantitative and qualitative. Various examples of qualitative deficiency mostly as regards vitamins are given. Vitamins B_1 and B_2 are considered, together with their roles in the causation of beriberi and pellagra. In yeast two other substances are present : (1) Bios, which is necessary for the growth of certain yeasts in inorganic media ; and (2) a substance, the absence of which causes in rats a condition the pathology of which is indistinguishable from that of pink disease in children. Vitamin B_1 deficiency in man and animals differs in certain respects and true beriberi should be differentiated from nutritional oedema, probably due to protein lack, and epidemic dropsy. It is claimed that lack of vitamin B_2 produces a disease in rats not dissimilar to human pellagra.

Dr. H. B. Day.—Discussed pellagra in Egypt and the work of Goldberger. He suggests that a larger protein consumption might need more vitamin B than when the protein was reduced to a minimum. Vitamin B seemed to act in the body like insulin.

Dr. G. W. Bray.—Referred to infantile beriberi in the Mandated Territory of Nauru, in the Polynesian group of islands, off New Guinea. Previously 50 per cent. of the infants died under the age of one year. The natives do not eat rice but coconut products, fish, and native fruits and the diet was deficient in respect of B factor. The clinical appearance of the children was that of infantile beriberi with a huge liver, distended stomach, enlarged right heart, leucopenia, etc. The yeast grown in the sap of the coconut palm, emulsified with cod-liver oil, caused remarkable improvement in the babies. Since this treatment was begun there has been only one death and the average weight is now 19 lbs. at six months instead of at one year, as previously.

Dr. Tertius Clarke.—True beriberi occurs in Malaya and not in India and unpolished rice will cure it. Kedah produces its own rice, which is neither polished nor parboiled, and there is no beriberi.

Dr. W. R. Aykroyd.—Gave his experiences with beriberi as it occurs n Newfoundland and Labrador. Here polyneuritis, myocarditis and occasional oedema were found among people suffering from malnutrition. The condition responded to dietetic treatment. For 3–4 months a year the diet was almost restricted to refined white flour bread, with a small addition of salt beef and pork, molasses, etc. The cases occurred during the worst dietetic season, i.e., April, May and June, and the

disease was definitely associated with poverty. It is interesting to note that the wrecking of a cargo of wholemeal flour lessened the number of cases in the district and that potato eaters rarely develop beriberi. In Labrador beriberi is, as a rule, rare because fresh meat is usually available. Most of the cases in these northern countries are of the "dry" type, and it is suggested that the "wet" form is beriberi plus hunger oedema.

Dr. G. W. Theobald.—Stated that the treatment of beriberi by varying the diet and prohibiting rice was not as simple as had been suggested. He had seen many cases of beriberi, associated with pregnancy, which showed no difference from the avian type experimentally produced. Siam, the third greatest rice exporting country in the world, has to polish its rice for the London market. The London market is thus the cause of beriberi in Siam. The speaker hoped that the League of Nations would tackle this and other similar urgent problems. "In modern Siam the Government would fain fill the bellies of their people with an expensive extract from the husks, which were indeed given to the swine to eat."

A. D. Bigland.

Aykroyd (W. R.). **Famine Oedema.**—*Brit. Med. Jl.* 1930. Aug. 16. pp. 247–248. [10 refs.] [Summary appears also in *Bulletin of Hygiene.*]

Clinically oedema has been found at times associated with all the food deficiency diseases except rickets, and since these diseases usually occur in association with general mal- or under-nutrition it is possible that the oedema is due to a shortage in one of the dietary fundamentals other than vitamins. The evidence seems to point to shortage of protein as the most likely cause. Famine oedema appears to respond to a good all-round diet, probably containing all the dietary essentials. The poorest Newfoundland families in late spring and early autumn may be reduced to a diet made up almost entirely of white flour bread, with very scanty additions of molasses, salt meat and salt fish and little else. At times, the diet may be reduced to bread and molasses, a régime which usually produces beriberi, a common disease in Newfoundland. Both the wet and dry forms occur, the latter being by far the commoner. A case is described of a woman of 39 years, who had marked oedema of the legs with severe ascites. For six months previous to the onset of the disease she had lived on a diet of dry bread and molasses, and for years previously her diet had not been far above this level. She had been in hospital 15 years previously suffering from typical dry beriberi which improved on dietetic treatment. A diagnosis of hunger oedema was made as typical signs of beriberi were lacking. A high protein diet without much vitamin B was given, but she became rapidly worse, and paracentesis was performed, and she was given an anti-beriberi diet when her condition slowly improved, but paracentesis had to be repeatedly done. A laparotomy revealed nothing to account for the recurrent ascites. It seems impossible that this was a case of famine oedema in which the capillary walls were permanently damaged, though the patient's general condition improved under dietary treatment. It is peculiar that a patient, who had practically lived on dry bread for six months, should develop this condition rather than one of the commoner deficiency diseases.

H. N. H. Green.

OSMAN (A. Arnold). **Swelling of the Feet and Ankles not associated with Albuminuria or Gross Organic Disease. Pathogenesis and Treatment of a Common Symptom.**—*Brit. Med. Jl,* 1930. Apr. 26. pp. 780–782. [4 refs.] [Queen Mary's Hosp., & Guy's Hosp., London.]

Oedema in the absence of albuminuria is a symptom of many conditions from beriberi to varicose veins in the legs. Here, however, is described a condition characterized by puffiness or swelling of the feet and ankles and not related to any of the usual causes. It occurs most commonly in debilitated females usually of the hospital class and should not be confused with excessive fatty deposit or with the erythrocyanosis crurum puellarum of Parkes WEBER. The condition under description is limited to a pure excess of water in the tissues.. The underlying cause appears to be an acidosis, i.e., a reduction of the concentration of bicarbonate in the plasma.

"The type of oedema described in this paper occurs mainly in the feet, ankles, and legs, is at its maximum in the evenings, is worse after exertion and in hot weather. It may be constantly present, waxing and waning with the factors just mentioned, or may only occur under some of these conditions, disappearing apparently spontaneously for weeks or months at a time, and then perhaps recurring. It should be noted that those conditions—menstruation, exercise, etc.—which are associated with an increase in the oedema are also those usually accompanied by a decrease in the plasma bicarbonate."

Treatment consists in giving alkalies according to the following method. Potass. citrate and sod. bicarb. gr. 30 of each with minims 30 of syr. aurantii in an ounce and a half of water are given in increasing doses till as much as 600 or 700 grains a day, or more if necessary, are taken. The fluid intake should be limited to about 3–4 pints per day. Of 16 cases thus treated the oedema cleared up completely in 13. Six subsequently relapsed, but of these, 4 were again cured by resuming their former dose.

The author is of the opinion that the good results obtained from alkali treatment confirm his contentions as to acidosis being the cause of the condition.

A. D. Bigland.

CLARKE (J. Tertius). **The Geographical Distribution of Rheumatic Fever.**—*Jl. Trop. Med. & Hyg.* 1930. Sept. 1. Vol. 33. No. 17. pp. 249–258. [36 refs.] [Summary appears also in *Bulletin of Hygiene.*]

Various authors, here quoted, have expressed the opinion that rheumatic fever is non-existent or, at least, very rare in the tropics. In Perak, F.M.S., out of 150,000 in-patients the author himself did not meet with a single case of rheumatic fever, mitral stenosis or chorea. In post-mortems he found no case of a valve suggestive of the scarred valve of a rheumatic heart. Similarly in a series of 600 autopsies in Singapore, Drs. FLETCHER and DUNCAN found no case of mitral stenosis. Evidence quoted from Canada and the United States shows that the amount of rheumatic fever diminishes as the tropics are approached. At New Orleans, which is in the latitude of 30° N., there is so little as to raise doubt whether there are any genuine cases at all. Some

workers believe that the disease exists at Panama, but there is such a mixed population there that there can be few persons of 20 years of age who were born there.

Medical returns are given for thirteen tropical Dependencies for 1925 and/or 1926 and for 1928. At first sight these suggest that the disease actually does occur though the incidence is very slight. For instance 914 cases out of 596,028 in-patients are diagnosed as cases of acute rheumatism or rheumatic fever ; this is 0·15 per cent. of the total sick whereas in St. Bartholomew's and in St. Thomas's Hospitals the proportion is about 2·0 per cent. or 13 times as much. Even this low incidence the author believes, for various reasons advanced, is due largely to errors of diagnosis. But even if all the returns were correct the difference in the amount of the disease in the temperate climates and in the tropics should indicate that there is some factor, common in one part and rare in the other, which investigation should eventually discover.

A. B. Hill.

Mackinnon (M.). **Rheumatic Fever and Chorea in Kenya.**—*Kenya & East African Med. Jl.* 1930. Mar. Vol. 6. No. 12. pp. 358–367. [Summary appears also in *Bulletin of Hygiene.*]

Seven cases are described of rheumatic fever or chorea occurring in Kenya [? at Nairobi.] All but one were in children, and in that case there was a history of rheumatic fever at eight years. In 6 instances there was evidence of a cardiac lesion. The choreic symptoms were severe. The author concludes that rheumatic fever and chorea are rare in Kenya, but apparently very severe when they do occur. Two acute rheumatic cases in adults are also described, one regarded as toxic arthritis, the other as of endocrine origin. Reference is made to the rarity of rheumatic fever in the tropics and to the views on its etiology of Tertius Clarke.

A. G. B.

Robic (J.). Sur la recrudescence de la diphtérie à Tananarive et sur l'utilité de la création d'un centre de prophylaxie antidiphtérique. [**Recrudescence of Diphtheria at Antananarivo and the Value of a Prophylactic Centre.**]—*Bull. Soc. Path. Exot.* 1929. Oct. 9. Vol. 22. No. 8. pp. 748–753. With 1 chart in text.

Since the beginning of the year diphtheria bacilli have been found in 10 natives and 18 Europeans ; 16 of the 28 were children. The disease was first identified bacteriologically in Madagascar by Thiroux in 1901, in which year there was an epidemic of 83 cases at the capital. A few cases have been detected in each year since with a recrudescence in 1916, and an increase again in the year under notice, dating from the winter of 1926 and thus corresponding with an extension and increase of virulence in France. The author asks whether diphtheria is as frequent and as grave in the native as in the European. Little information is available. Throat smears are rarely made from native children. Anti-diphtheritic vaccine, apparently anatoxin, has been used in Madagascar since the end of 1927 ; 250 European children have now received it. It is suggested that its use should be extended to native children.

A. G. B.

KIRSCHNER (L.). **The Bacteriology and Pathology of Diphtheria in the Dutch East Indies.**—*Meded. Dienst d. Volksgesondheid in Nederl.-Indië.* 1929. Vol. 18. No. 1. pp. 164–183. [48 refs.] [Pasteur Inst., Bandoeng.] [Summary appears also in *Bulletin of Hygiene.*]

The author records an interesting series of observations on the incidence of diphtheria in the Preanger District of Java, during the period 1921–1927. He notes the considerable increase in the number of recorded cases, which followed the provision of facilities for bacteriological diagnosis in the Pasteur Institute at Bandoeng in 1923. It would appear that diphtheria is by no means an uncommon disease in the Island, since 116 cases were diagnosed at Bandoeng during 1926, 64 among Europeans, 40 among the native Javanese, and 12 among the Chinese population. It seems probable, indeed, that the infection is more widespread than these figures suggest ; that it is an important cause of mortality in children ; and that a mild form of the disease is relatively common. It may be noted that the strains of *C. diphtheriae* isolated at the Institute were submitted to a detailed bacteriological examination, including virulence tests in the guineapig. As the author points out, these results are strikingly dissimilar to those recorded by SMITS (see *Bull. of Hyg.*, Vol. 2, p. 285) for native coolies in the neighbouring island of Sumatra, among whom a high proportion of Schick-negative reactors was stated to be associated with an entire absence of diphtheritic infection. [It is clear that, in the light of this report, we cannot accept the Sumatra experience as providing an example of a population among whom the Schick-negative reactors must have developed their antitoxic immunity apart from naturally-occurring active immunization.]

W. W. C. Topley.

STIVEN (H. E. S.). **Splenectomy for Egyptian Splenomegaly : an Account based on a Record of 390 Cases.**—*Brit. Jl. Surgery.* 1929. Oct. Vol. 17. No. 66. pp. 230–235. With figs. 144–146 (1 map).

A paper read at the International Congress of Tropical Medicine and Hygiene at Cairo in 1928. The author is of opinion that splenomegaly, one of the most disabling diseases to which the Egyptian fellaheen are prone, is in their case due to heavy infections of bilharzia of the Mansoni type, and is confident that proof of this will ere long be forthcoming. After an experience of 390 splenectomies performed with his own hand he thinks it imperative to lay stress upon the difficulties and dangers of the operation and the necessity of careful preparation of the patient, with a view to sparing young surgeons the disappointment of high mortality in their early cases and consequent doubt as to the justifiability of the undertaking. The material to be worked upon being of the unhealthiest nature, a preliminary course of treatment lasting from five to six weeks is held to be necessary. Whether by examination of the stools and urine bilharzia ova or ankylostome eggs are found or not, it must be presumed that the patient is full of the common Egyptian parasites. This preliminary treatment includes as a matter of routine a dose of carbon tetrachloride of 2 to 4 gm. according to age and weight, twelve intravenous tartar emetic injections administered on alternate days, and an antisyphilitic course of 606 or corresponding drug. A rhubarb and soda mixture is given for the first week, subsequently an

iron and arsenic tonic and a full nourishing diet which includes "fool nabet," i.e., beans allowed to germinate in water for 48 hours. By these means health is greatly improved. On the evening before the operation an injection of pneumococcic vaccine must be given; otherwise the patient will almost certainly succumb to pneumonia.

Under spinal anaesthesia by stovaine the author makes an incision, varying in length with the size of the spleen, down the centre of the left rectus parallel with the middle line and starting at the costal margin. Skin and rectal sheath only are divided by the knife, the rectus itself being separated into two equal parts by a sweeping action of the finger. The peritoneum is opened, and in the absence of adhesions the spleen can be delivered through the wound. The pedicle is then suitably clamped, and the organ removed. The former is now transfixed with a long pedicle needle armed with black and white linen threads, linen being less apt to slip than the silk and the difference in colour insuring recognition of the necessary interlocking at a glance. Details of procedure are given, and the methods of dealing with adhesions, when present, described. These of necessity render the operation more complicated and difficult. The successive steps of wound closure and parietal restoration are noted. After operation patients are given nothing to drink for twelve hours, and then strict fever diet for five days; subsequently a purge, nourishing diet, and iron and arsenic. They usually leave hospital after fifteen days, and in two or three months are fit for work.

The immediate mortality is 13 per cent., and on following up the cases (always difficult in a country like Egypt) this figure is found to be increased to 19 per cent. by those who die after return to their villages. A dangerous operation is thus justified by results upon which the author deserves congratulation. Without operation expectation of life is extremely limited.

The paper includes a map showing the geographical distribution of the disease, but in this direction there is more work to be done. The villages at the end of canals would appear to be the most heavily infected.

J. J. Pratt.

Toullec (F.). Les splénomégalies chroniques. [**Chronic Splenomegalies.**]—*Rev. Prat. Malad. des Pays Chauds.* 1929. June. Year 8. Vol. 9. No. 6. pp. 283–286; 289.

The author classes splenomegalies as primary and secondary. In the first the spleen is the chief site affected and the characters of the enlarged organ are so fixed as to be distinctive. In the second the enlargement is a symptom super-added to other symptoms, it is variable in degree and has no distinctive characters. Of primary splenomegaly kala azar is an instance for the reasons named, and the fact that one can recover the causal parasites from the spleen; of secondary splenomegaly alcoholic cirrhosis is a type.

The secondary splenomegalies are divided again into the cirrhotic, the glandular and the blood forms. Among the cirrhotic splenomegalies are the parasitic—malarial, distomian and bilharzial. The malarial form must not be confused with the primary splenomegaly of malarial origin referred to below. The distomian form has often been seen in the Far East: it is due to *Clonorchis sinensis*, but the ova are not to be found in the spleen when they are present in large numbers in the liver. It must not be classed as primary. The same is the case with the chronic splenomegaly secondary to bilharzial cirrhosis, Egyptian splenomegaly described by Day and Ferguson. Examination during

life always demonstrates ova in the liver, but never, the author writes, in the spleen.* Among the glandular splenomegalies, in which enlarged glands and a changed leucocyte formula are always found, the author places that found in Chagas' disease.

Among the primary chronic splenomegalies are considered malaria and kala azar. The diagnosis of the malarial forms, says the author, will be established by the finding of an average degree of splenomegaly, a spleen with its long diameter transverse (couchée), smooth, regular and sensitive, and not giving the sensation of a notch. It must not be confused, as is so commonly done, with the splenomegaly secondary to malarial hepatic cirrhosis or malarial cachexia. The author notes that Sadi DE BUEN has pointed out if in examining a large spleen one feels the notch one should think of kala azar.

A. G. B.

GRAHAM (J. W.). **A Note on Ganglion.**—*Kenya & East African Med. Jl.* 1930. June. Vol. 7. No. 3. pp. 78–79. [1 ref.]

Among 431 cases of tertiary yaws seen in 1926 in Kigoma, Tanganyika Territory, there were 14 patients with ganglion ; of 18 ganglia 15 were on the wrist, 3 on the knee. The case here described was that of a native male of 20 with a ganglion on the back of each hand. There was a scar as of yaws. The W.R. was positive. The patient received in his muscles 18 grains of bismuth sodium tartrate in doses of 3 grains twice weekly and was discharged 3 weeks later with no sign of the swellings.

A. G. B.

MOORE (D. Fitzgerald). **Clinical Cure of Ganglia by N. A. B. and Bismuth.** [Correspondence.]—*West African Med. Jl.* 1929. Oct. Vol. 3. No. 2. p. 48.

The author refers to papers by FRANKLIN and by MACGREGOR (this *Bulletin*, Vol. 23, p. 931 ; Vol. 25, p. 11). He himself has treated 30 consecutive cases with success with a course of 7 injections of 0·3 gm. N.A.B. with 1 cc. of Bisoxyl or its equivalent. A striking feature of ganglia in Nigeria is their symmetry, suggesting a constitutional disease which " may well be yaws." Cases of acute teno-synovitis react to the same treatment.

A. G. B.

ROGERS (Leonard). **Forecast of the Probable Major Variations in Cholera, Smallpox and Plague in India during 1930, based on the Meteorology of 1929.**—*Indian Med. Gaz.* 1930. Apr. Vol. 65. No. 4. pp. 181–185. [Summary appears also in *Bulletin of Hygiene.*]

The author has shown (see this *Bulletin*, Vol. 26, pp. 83 & 633) that the major epidemics of smallpox, cholera and plague are dependent on antecedent meteorological variations. For example he considers that the factors influencing cholera are : (1) Low monsoon and winter rains of the previous year ; (2) a high degree of susceptibility due to

* In a summary of " Egyptian Splenomegaly and its Relation to Schistosomiasis " by R. B. COLEMAN [this *Bulletin*, 1927, Vol. 24, p. 174] the statement is made—Microscopical examination of spleens always shows the presence of the eggs of *S. mansoni*. For spleens LIVER should be read. However, Dr. Marrian PERRY writes that in Egypt ova are in fact found in the spleen (how commonly he does not say) [*Trans. Roy. Soc. Trop. Med. & Hyg.* 1929, Vol. 22, p. 543.]

absence of recent epidemic prevalence ; and (3) a favourable absolute humidity of about 0·400 and over at the time of the usual seasonal increase of cholera in the particular area. A table is given forecasting the probable cholera incidence in separate provinces of India in 1930. In East and West Bengal the forecast is that incidence will be about average, in East and West United Provinces excess incidence is predicted caused by Allahabad Kumbh Fair, Punjab moderate increase over average, West Central Provinces average to low unless infected from Bombay Deccan where average to some excess is predicted.

With regard to smallpox it is stated that "the remarkably well distributed monsoon rains of 1929 naturally resulted in only slight variations in the monsoon absolute humidity in most of the provinces of India, consequently few material variations from the average smallpox prevalence in 1930 are to be expected." Only in the central Provinces, and N.W.F.P. is it predicted that the incidence will be above the average.

The forecast of plague is rather low incidence in Bihar and Orissa, and especially in the central Provinces and possibly slight excess in the Punjab.

It is concluded that no very great variations of cholera, smallpox and plague may be expected in 1930 except the regularly recurring twelve-yearly Allahabad Kumbh Fair cholera one in Bihar and the United Provinces.

H. M. Woods.

ROGERS (Leonard). **Further Experience in forecasting Epidemics of Smallpox, Plague, and Cholera in India, and its Bearing on the Reduction of Cholera.**—*Proc. Roy. Soc. Med.* 1930. Apr. Vol. 23. No. 6. pp. 793–801 (Sect. Epidemiol. & State Med. 27–35). [5 refs.] [Summary appears also in *Bulletin of Hygiene.*]

In former studies the author showed that certain meteorological variables were closely related to the incidence of smallpox, plague and cholera in India. The records are now analysed for the years subsequent to that report, and for all three diseases it is found that their prevalence in the different provinces conforms remarkably closely with the rules worked out in the earlier paper. In fact, these years, 1923–29, furnish striking examples of the feasibility of forecasting even localized epidemics by a study of the previous climatic records.

The Hardwar Kumbh Fair, which is held every twelve years, was responsible for an epidemic of cholera in 1927. Local sanitation at the fair sites fails to control its spread by the pilgrims, and protective inoculation appears to be the only feasible method of combating the disease. The people must be educated up to the point when they will be ready to submit to inoculation before, instead of only after, exposure to infection.

A. B. Hill.

GAMBIER (A.). Un cas de mélioïdose observé à Phnôm-Penh. [**A Case of Melioidosis at Phnôm-Penh.**]—*Bull. Soc. Path. Exot.* 1930. May 14. Vol. 23. No. 5. pp. 436–441. [3 refs.]

The case occurred in a Russian who resided ordinarily in Siam. At first the symptoms pointed to insanity and a confusional state. In answer to a question he began his reply in French, continued in Russian and finished with German. A cocco-bacillus was isolated by haemoculture, which from its appearance was at first taken to be the plague bacillus. It was found,

however, to be motile and this led to further investigation. The tests applied and direct comparison with strains of *Pf. whitmori* showed it to be identical with this organism. W. F. Harvey.

Letonturier, Martin & Souchard. Un nouveau cas de mélioïdose observé en Cochinchine. [**A New Case of Melioidosis in Cochin China.**] —*Bull. Soc. Path. Exot.* 1930. Mar. 12. Vol. 23. No. 3. pp. 273–279. With 1 text fig.

The cases of melioidosis now being reported are increasing in number. About fifteen altogether have so far been published. The present case was that of a young officer resident only four months in the colony. Some 12 days before admission to hospital he felt slight chilliness, was tired and had a slight rise of temperature. He continued at his work. On admission to hospital his condition was serious and resembled the torpid condition of a patient with typhoid fever. This diagnosis was the first one adopted. Blood culture gave what was thought to be *Bact. faecalis alkaligenes*. The appearance of orchitis and epididymitis, with what was assumed to be a collection of pus in the tunica vaginalis, presented a perplexing symptom. A polynuclear leucocytosis pointed to an affection other than typhoid fever in which there is usually pronounced monoleucocytosis. A second blood culture gave the necessary evidence to incriminate the bacillus of melioidosis. This was confirmed at autopsy where about 100 cc. of thick pus were found in the tunica vaginalis, the spleen was diffluent and there were no signs of ulceration in small or large intestine. The pus gave on culture the same bacillus as had been obtained by blood culture. W. F. Harvey.

Wollstein (Martha) & Kreidel (Katherine V.). **Sickle Cell Anemia.** —*Amer. Jl. Dis. Children.* 1928. Nov. Vol. 36. No. 5. pp. 998–1011. With 4 text figs. [22 refs.] [College of Physicians & Surgeons, Columbia Univ., New York.]

Summaries of previous papers on this subject are to be found in this *Bulletin* [Vol. 20, p. 670 ; Vol. 21, pp. 670, 671, 926 ; Vol. 22, pp. 669, 670 ; Vol. 24, pp. 66, 670 ; Vol. 25, pp. 387, 388, 1001]. The present paper reviews the records of 15 cases in New York negro children. Details are given of four " active " cases (ages between 3 and 4 years), three of which were fatal and were carefully investigated post-mortem, with the result that except for the anaemia no other cause of death was demonstrable anatomically or by histological methods ; " all showed fatty degeneration of myocardium and liver, distension of the sinuses of the spleen with sickle cells, phagocytosis of the sickle cells by Kupffer cells in the liver, and iron pigment in the spleen, liver, and kidneys." Four other " active " cases are mentioned in which the causes of death are recorded as bronchopneumonia (2), pneumococcus meningitis and tetany, and three latent cases, where the causes of death are recorded as miliary tuberculosis(2), and pneumococcus meningitis. The clinical symptoms common to all the active cases of sickle-cell anaemia are reviewed, and the pathogenesis is discussed, as usual, and the hereditary predisposition is confirmed as a negro character. A. Alcock.

Cooley (Thomas B.) & Lee (Pearl). **Sickle Cell Anemia in a Greek Family.**—*Amer. Jl. Dis. Children.* 1929. July. Vol. 38. No. 1. pp. 103–106. With 2 text figs. [6 refs.] [Children's Hosp., Michigan.]

The authors regard this as the first observed instance of sickle-cell anaemia in an individual free from any reasonable suspicion of an admixture of negro blood.

The individual in this case is a four-year-old (American-born) Greek boy whose parents were natives of a small village in the Peloponnese. He was brought to hospital for anaemia, enlarged spleen, and jaundice, and on examination, along with confirmation of these points the superficial lymphatic glands were found to be enlarged, and moist preparations of blood showed a rapid and extreme development of sickle-cells. The blood of the parents and the other members of the family was also examined; that of the mother showed slow and incomplete development of sickle-cells, and in that of a fourteen-year-old brother elongate forms were seen which although not typical sickles, were so much like some observed in sickle-cell anaemia as to arouse suspicion.

The authors conclude that "the general acceptance of the dictum that sickle-cell is peculiar to the negro race has been too precipitate."

A. Alcock.

FRADKIN (William Z.) & SCHWARTZ (Leo S.). **Sickle Cell Anemia.**—*Jl. Lab. & Clin. Med.* 1930. Mar. Vol. 15. No. 6. pp. 519–529. With 3 text figs. [39 refs.] [Jewish Hosp., Brooklyn.]

A large part of this paper consists of a good and concise, but lengthy, review of the literature of sickle-cell anaemia; the laboratory findings of the case reported are given in remarkably full and precise detail and also occupy much space.

The case relates to a negress of 26 years, born and bred in S. Carolina. Her symptoms on admission (pain in the lower abdomen, fever, and vaginal discharge) were such as to consign her to the gynaecological department. There a tentative diagnosis of adnexitis with subacute pelvic peritonitis was made, for although sickle-cells were observed their significance was weakened by the urgency of the localized abdominal symptoms and also by the absence of any confirmatory sign in the relatives of the family. Sudden onset of pain and other symptoms in the upper abdomen, particularly on the right side, suggested acute cholecystitis and transfer to the surgical department. Here the condition on opening the abdomen was disclosed as a case of sickle-cell anaemia complicated by mesenteric tuberculosis. After the operation, which was followed by transfusion of 500 cc. of blood, the patient improved rapidly.

"Emphasis is directed to the fact that most patients with sickle-cell anaemia are susceptible to tuberculosis probably because of their lowered resistance to infection." The authors also conclude that a diagnosis of an "acute surgical abdomen" in a negro patient is hazardous without a previous search for sickle-cells.

A. Alcock.

STEINBERG (Bernhard). **Sickle Cell Anemia.**—*Arch. Pathology.* 1930. Apr. Vol. 9. No. 4. pp. 876–897. With 1 fig. [54 refs.] [Toledo Hosp., Toledo, Ohio.]

This is a comprehensive review of sickle-cell anaemia—its chronicle (with 54 documentary references), its incidence, its characteristic erythrocytes, its phases (latent and active) and its pathology, treatment, and prognosis. Itself a recension, it cannot be summarized further. It is a good piece of work; but, all be it that Thomas Hobbes wrote "words are but wise men's counters," it is to be regretted that the author has restored the base counter "sicklemia"—half good English, and a moiety bad Greek—to his sterling currency.

A. Alcock.

Levy (Joseph). **The Origin and Fate of Sickle-Shaped Red Blood Cells.**—*Arch. Pathology.* 1929. May. Vol. 7. No. 5. pp. 820–826. With 2 text figs. [30 refs.] [New Rochelle Hosp., New Rochelle, N.Y.]

"The change to the sickle shape observed in red cells is a phase in a profound disturbance of the formation of red blood cells. Embryonic red blood cells and normoblasts enter the systemic circulation. These cells proceed to divide or extrude their nuclei. The resultant cells project pseudopodia and assume bizarre shapes. Heat (body temperature) hastens the change; cold (0° C.) inhibits and may actually prevent it. After varying periods, some of the abnormally shaped red cells retract their pseudopodia and return to the parent form; others retain their bizarre shapes permanently. Refrigeration (0°C.) prevents the return of the cell from sickle shape to the form of the biconcave disk. Sickle cells kept at body temperature eventually disintegrate by fragmentation."

A. Alcock.

Lewillon (R.). Une épidémie de paratyphoide C. [**An Epidemic of Paratyphoid C.**]—*Bruxelles-Méd.* 1930. June 1. Vol. 10. No. 31. pp. 841–851. With 4 charts in text.

This article treats of the occurrence, in the Katanga district of the Congo, of an epidemic in an imported labour force recruited from a tribe not possessed of great stamina and to a large extent suffering from chronic malaria. Recruits are isolated in an acclimatization camp under medical supervision and gradually introduced to work. All the recruits had originally been given T.A.B. vaccine. The disease was contracted before arrival in camp and proved to be an epidemic of paratyphoid C. Altogether, 41 cases occurred and 25 patients died. Numerous illustrative cases and temperature charts are given. Septicaemic conditions were a marked feature of the epidemic and at the post-mortem examinations the pathological lesions of the intestine were for the most part insignificant. Splenomegaly, however, was very constantly present. The diagnosis was made by means of blood culture and by serum agglutination test. The agglutination titres with patients' sera frequently exceeded 1 in 1,000 for paratyphoid C and were usually well below 1 in 400 for the typhoid bacillus. Prophylactic treatment of recruits is now by T.A.B.C. vaccine instead of by T.A.B.

W. F. Harvey.

Giglioli (George). **Paratyphoid C, an Endemic Disease in British Guiana.**—*Jl. Hygiene.* 1929. Dec. Vol. 29. No. 3. pp. 273–281. [11 refs.]

Already noticed in regard to the essentially important point—the endemicity of paratyphoid C. [see this *Bulletin*, Vol. 27, p. 564].

W. F. Harvey.

Kouwenaar (W.). Beteekenis van het voorkomen van maagzweren in de tropen voor de studie der aetiologie. [**The Significance of the Occurrence of Gastric Ulcer in the Tropics for the Study of its Etiology.**]—*Nederl. Tijdschr. v. Geneesk.* 1930. May 3. 74th Year. 1st Half. No. 18. pp. 2321–2341.

It is often stated in the literature that gastric ulcer seldom occurs in the tropics. In Java, however, it has long been known, both clinically and by post mortem examination, that this is not the case. What has been found is that while gastric ulcer is frequent among Chinese,

Klings and Europeans, it is very rare among Javanese. An analysis of 2,173 post mortem examinations showed an incidence of 10·1, 5·6 and 0·95 per cent. among Chinese, Klings and Javanese (men) respectively. These percentages, with due regard to their probable errors, are significantly different for Chinese and Javanese. It is especially so for the earlier ages. After establishing the statistical fact of such a racial difference the author endeavours to use it for the elucidation of the causation of gastric ulcer. For the production of ulcer there are always necessary in the first place a primary lesion, such as an anaemic necrosis or an infarct, and secondly factors which combine to prevent healing. The various factors which may be concerned in the production of gastric ulcer are dealt with in very great detail. Among the most important may be reckoned the influence of food, vascular disease and constitutional susceptibility. As regards food there is but little difference in this respect between Chinese and Javanese. Nor is there much evidence for the incrimination of vascular affection as the cause of the condition. There remains the factor of constitutional liability and a great part of this article is taken up with a discussion from this point of view of the neurogenic causation of the disease. Two opposite views are held by those who subscribe to this theory, one which would explain the production of ulcer as a vagotonic effect, the other as a sympathicotonic effect. These different views may be labelled respectively the enterospastic and the angiospastic. If we investigate what is known regarding the action of the vegetative nervous system in the various races to be found in Deli, then we may lay down that climate acts as stimulant or irritant on that system among Europeans who suffer considerably from gastric ulcer, as little or no stimulant among Javanese who rarely suffer from gastric ulcer and as little or no stimulant among Chinese who suffer considerably from gastric ulcer. Climatic action, therefore, would not seem to be the reason for the difference in incidence between Chinese and Javanese. Then what is it that stimulates the neurogenic disposition ? Various possibilities are considered, that of congenital predisposition, alteration of hydrogen ion concentration of the blood in the tissues (acidosis), endocrine gland influence, psychical disposition, organic nervous disease and asthenic habit of body.

It would seem necessary to investigate still more closely the various causes suggested with a view to explaining more satisfactorily the difference in incidence of gastric ulcer among the different races dwelling in the tropics.

W. F. Harvey.

Yao (H. Y.), Yuan (I. C.) & Huie (Dorothy). **The Relation of Flies, Beverages and Well Water to Gastro-Intestinal Diseases in Peping.**—*Nat. Med. Jl. China.* 1929. Aug. Vol. 15. No. 4. pp. 410–418. With 1 chart in text. [6 refs.] [Peking Union Med. College, & Public Health Dept., Greater Peping,* China.]

The authors sought to discover which of three well-established agents in the spread of intestinal disease—house flies, contaminated beverages and well-water—was of relatively greater importance in Peping. They studied the problem in the summer of 1928, and give a detailed account of their methods.

Flies. Most of the households are provided with open or poorly covered latrines from which the excrement is removed daily with a scoop

* The variants Peking, Peping, Peiping, which the careful reader will note, are not errors : all these forms are now used.

and conveyed to the country in open wicker baskets, so that flies have free access to it. Of over 384,000 flies trapped, the common house fly was present in 98·4 per cent. ; the relative distribution of other species was similar to that found elsewhere. By far the greatest number were taken in July and August, and a graph shows that August is the month in which the mortality from gastro-intestinal diseases rises to its maximum. It is computed that the number of bacteria on the surface of individual flies varied between 90 and two millions, and internally between 66,000 and 15 millions. The authors examined 50 batches of 100 flies each for the presence of faecal coli, and for dysentery, typhoid and cholera bacilli. Only one batch was free from coli. *Bact. dysenteriae* was isolated from the external washings of 6 batches and the internal contents of 12 batches, i.e., 30 per cent. of the batches examined. In 12 of 70 batches of flies examined either internally or externally in September human intestinal parasites were found—flagellates, ciliates, *E. coli* cysts, *E. nana* cysts and *E. histolytica* cysts (in 2 batches).

Beverages. A beverage composed of water, sugar and dried fruits, with floating ice, commonly hawked about the streets, was chosen ; the sources of contamination were many. Of 50 specimens obtained from 6 localities 27 contained *Bact. coli* of faecal origin and 10 samples contained *Bact. dysenteriae.*

Well-water. Three shallow wells in congested streets were examined in 54 specimens. The average of bacterial counts was 1,000–2,000 bacteria per cc. ; 34 samples contained *Bact. coli*, that is more than half.

The authors believe that flies are of greater importance in the transmission of disease than the fluids examined. Though the incidence and mortality from enteric fevers is very high in Peping typhoid and paratyphoid bacilli were not isolated.

A. G. B.

Silvan (P.). Les diarrhées chroniques tropicales. [**Chronic Diarrhoea in the Tropics.**]—*Marseille-Méd.* 1930. Jan. 25. Vol. 67. No. 3. pp. 109–117.

As the result of alcohol, malaria, and insufficiency of hepatic function, the antiseptic properties of the bile are much diminished in the tropics. On the other hand a meat dietary predisposes towards enteritis and enterocolitis, which is aggravated by the presence of numerous parasitic worms or micro-organisms.

After giving a general description of sprue and amoebic dysentery the intestinal manifestations due to *Strongyloides stercoralis* are described. Dr. Silvan believes that this parasite produces cutaneous symptoms, digestive symptoms and diarrhoea. The diarrhoea appears to have no distinctive characters. Three or four liquid stools are produced during the day. Treatment should be partly dietetic, and when the infection is primarily responsible for the illness, thymol and santonin should be exhibited.

P. H. Manson-Bahr.

Haridas (G.). **Cases of Secondary Anaemia among Northern and Southern Indians in Singapore.**—*Malayan Med. Jl.* 1929. Dec. Vol. 4. No. 4. pp. 133–136. [1 ref.]

The author says that the primary type of anaemia is practically unknown in Singapore. The secondary anaemias sometimes resemble

pernicious anaemia with absence of HCl from stomach. A high colour-index is common and conditions such as sprue, ankylostomiasis, malaria or lead poisoning are present. Of the 25 cases collected, 12 were North Indian Hindoos; these people are "strict vegetarians," and in their own country get fresh wheat and barley, abundant cow's milk, fresh vegetables and fruits. In Malaya they live chiefly on rice and develop a poor state of nutrition. He finds that diet is more important than drugs and meat a necessity to rapid recovery. Many patients show marked improvement after administration of liver extract. Details are given of a few cases. The underlying conditions must be thoroughly treated.

A. G. B.

Mackie (F. P.). **Malignant Anaemia of the Tropics.**—*Indian Med. Gaz.* 1929. June. Vol. 64. No. 6. pp. 305–307. [1 ref.]

Lately a good deal has been heard of a severe anaemia of pregnancy in India and of the anaemia of sprue. Mackie has resurrected some interesting notes made in Bombay more than 20 years ago which show that there was prevalent then, as now, a severe anaemia of aplastic type, not limited to pregnant females or to the female sex and quite distinct from the anaemia of sprue cases. The condition exhibits very low red counts, absolute leucopenia, relative small mononuclear increase, very low haemoglobin, colour index variable, normoblasts and megaloblasts scarce, microcytes frequent and much poikilocytosis and fragmentation of red blood corpuscles.

J. F. C. Haslam.

Phipson (E. S.). Sur une maladie nouvelle observée à Bombay. [**A New Disease seen at Bombay.**]—*Bull. Office Internat. d' Hyg. Publique.* 1930. May. Vol. 22. No. 5. pp. 927–928. [Summary appears also in *Bulletin of Hygiene.*]

The author reports from Bombay 15 cases of an affection of undetermined nature, which in 7 instances resulted in death. All were Europeans admitted to hospital for different reasons. After 3 to 31 days with no particular symptoms they presented an eruption and fever. The eruption had the appearance of a papulo-macular shining erythema, beginning at the trunk and then invading the rest of the body, limbs and face. The eyes are bloodshot with muco-purulent exudate; in severe cases the sclerotics rapidly ulcerate. Temperature varies between 102° and 104° F. The mouth and lips are dusky and sordes cover the tongue. The patients are apathetic and on the 3rd or 4th day pass into a typhoid state. In slight cases the eruption and fever may disappear and reappear once or more; recovery is accompanied by complete desquamation. Laboratory examinations have hitherto been unhelpful. Cultures of blood, urine, faeces, pharyngeal exudates, C.S.F. and contents of macules negative. Widal and Weil-Felix negative. Liver puncture, no leptospira. The disease is possibly an abnormal form of scarlatina [but no mention is made of the Dick or allied reactions].

A. G. B.

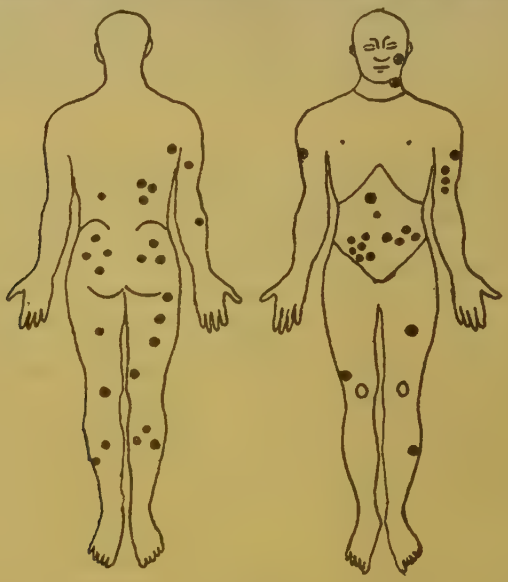
CARPENTIER (G.). Note au sujet d'une affection humaine signalée à Firouzkouh (Perse). [**Note on a Human Affection reported from Firuzkuh, Persia.**]—*Bull. Soc. Path. Exot.* 1929. Oct. 9. Vol. 22. No. 8. pp. 677–679.

The affection described is met with frequently on the great road which leads from Teheran east to the province of Khorassan. It is a fever following on the bite of a " large parasite " living in poor and ill-kept houses. Itching accompanies the bite, and a warm painful swelling with black central point, which is slow to disappear. The symptoms, which follow in 3–5 days, are fever, vomiting and jaundice. It is sometimes mortal. Twenty specimens were obtained of an Argasine tick, perhaps Ornithodorus, and were forwarded to the Pasteur Institute. The natives appear to be immune. The author suggests that the disease is a spirochaetosis. [Relapsing fever has long been known to occur in Persia, see this *Bulletin*, Vol. 25, p. 585. The tick incriminated is *Ornithodorus tholozani*.]

A. G. B.

SAYERS (Edward G.). **Tropical Myositis and Muscle Abscess.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1930. Jan. 30. Vol. 23. No. 4. pp. 385–400. With 14 text figs. & 1 map. [3 refs.]

Dr. Sayers was compiling this paper on myositis in the Western Solomon Islands when Dr. BUXTON's account of the disease in Samoa



Sites of lesions in Dr. Sayers' 26 cases of tropical myositis and muscle abscess. Each dot represents roughly the centre of a lesion.
[Reproduced from the *Transactions of the Royal Society of Tropical Medicine and Hygiene*.]

came to hand (briefly noticed in this *Bulletin*, Vol. 26, p. 436], and reference to this is frequently made. The climatic conditions are

described with the conclusion that the area in question belongs to the hot moist tropics. The population is classed in two divisions—local natives, just over 6,000 ; and indentured labourers from Malaita in the Eastern Solomons, about 1,000. The number of cases seen was 26—local natives 19, indentured labourers 7. The incidence in each group was similar, an observation which is of importance when the origin of myositis is under discussion. Of the 26, 22 were males and 4 females, a similar incidence to BUXTON's ; 19 were between the ages of 16 and 45 ; five were under 14 years, the youngest being 9 months. The lesions numbered 46, i.e., 1·8 to each case. Nine had non-suppurating lesions only, 11 had suppurating only and 6 had both kinds. The chances of any lesion resolving or suppurating are regarded as even. The author gives a table of the site of lesions similar to that of BUXTON. The distribution is shown graphically in the figure, on which the comment is made, that half the lesions are on the trunk and buttocks, and that there is a marked tendency for implication of the muscles of the iliac fossae. The parts of the body covered by the loin cloth are by no means less liable than the more exposed parts, an observation which is against insect bite causation.

He goes on to give the history of cases of non-suppurative, suppurative, and mixed cases. Severity varies much. Some run a high tempeature with signs of acute infection ; others are chronic and toxaemic symptoms almost absent. Several temperature charts are given. A note on pulmonary complications draws attention to BUXTON's suggestion that lung condition and myositis might be connected. Here six of the 26 had such complications, either frank pneumonia or consolidation at the lung base. As to temperature there is noted the occurrence of crisis or rapid lysis in non-suppurative cases. For pathology the author has little to tell us. He thinks that BUXTON's staphylococcus origin will not explain the non-suppurative cases.

The relationship to filariasis is then discussed, and here the author agrees with BUXTON who declares against a filarial origin. Filarial disease is comparatively common on Malaita ; of 50 night bloods from Malaita labourers 8 contained microfilariae and he has seen several early cases of elephantiasis amongst them. In his own district of New Georgia he has seen only two cases of elephantiasis, one of which was probably leprotic, and in the night-blood of 150 no embryoes were seen except in one case where Malaitan residence was proved. He believes then that filariasis is either very rare or absent in the Western Solomons, but it was noted above that the incidence of myositis differs little in the two groups. Microfilariae were sought in 12 cases of myositis ; they were found only once—in a Malaita man. " It is very hard to reconcile the theory of filarial origin with the five cases occurring in children under 14." The author suggests that though the disease is not due to *F. bancrofti*, it may be of other filarial origin ; microfilariae should be looked for in the skin ; and he draws attention to the similarity of symptoms of trichinosis.

A. G. B.

LOW (G. Carmichael) ; MANSON-BAHR (Philip) ; BUXTON (P. A.). **Tropical Myositis.** [Correspondence.]—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1930. Mar. 17. Vol. 23. No. 5. pp. 547–551.

Dr. SAYERS' paper gave rise to this correspondence. Dr. Low argues that if muscle abscesses have a cause other than filaria, they should

occur in countries free from *F. bancrofti* infection, but in his experience they are not seen in Uganda (non-filarial) but are frequent in West Indies (filarial). Dr. Manson-Bahr "remains unconvinced that *F. bancrofti* is not the *fons et origo* of the whole trouble." and gives several references. Dr. Buxton's argument may be summarized thus :—

(1) The great majority of filarial abscesses occur in lymphatic glands, not in muscle.

(2) Forty-one Samoans with myositis had no more frequent infection with microfilaria and no higher incidence of hydrocele and enlarged epitrochlear gland than a large group of normal Samoans ; (these physical signs are correlated with filarial infection).

(3) The disease attacks males much more frequently than females, and young adults rather than older persons, neither of which is easily explained by the filarial theory.

(4) It attacks large muscles, not usually the site of filarial infection.

(5) Myositis does not occur in the Tokelau and Ellice islands where filarial infection is frequent.

While he does not dispute that *F. bancrofti* occasionally occurs in an abscess in muscle, he suggests that the connexion between myositis and filarial infection lies in the realm of faith rather than of fact.

A. G. B.

Robertson (Russell L.). **Tropical Myositis in Adamawa Province, Nigeria.**—*West African Med. Jl.* Lagos. 1930. Apr. Vol. 3. No. 4. pp. 80–82. [3 refs.]

Patton (C. R.). **"Bungpagga."**—*Ibid.* pp. 82–83.

Moore (J. Jackson). **A Case of Multiple Muscular Abscesses.**—*Ibid.* pp. 83–84.

Ross (F.). **Case of Multiple Abscesses.**—*Ibid.* p. 84.

Thomson (J. W.). **Notes on Cases of Deep Abscesses.**—*Ibid.* p. 84.

A.C. **Myositis.**—*Ibid.* pp. 85–87.

Gray (G. M.). **Tropical Myositis.**—*Ibid.* p. 87.

Johnson (W. B.). **A Note upon Tropical Myositis.**—*Ibid.* p. 87.

Smith (E. C.). **Laboratory Note on Four Cases of Muscle Abscess.**—*Ibid.* p. 88.

This formidable list of titles covers an original paper by Russell Robertson, 4 reprints of West African papers on this subject, an historical account by A.C., notes by Gray and Johnson, to whom the dossier was submited, and a laboratory note by E. C. Smith.

Robertson, who writes from the Garkida Hospital, reports 20 cases. The disease was most prevalent in the rainy season, 17 of the 20 were males, the majority in the 3rd and 4th decades ; a recurrence was not noted. The author would incriminate a staphylococcus ; the infecting organism must be blood-borne owing to the wide distribution of infection. The disease is characterized by multiple necrotic abscesses in the deep muscles of body and limbs. Hard swellings appear about the fifth day of fever and proceed or not to suppuration. A table gives the location of the swellings and other data. Pus forms slowly and the temptation is to incise too soon ; the author believes that many of the smaller abscesses would be absorbed if left alone. The loci forming pus averaged three in this series. Debility is great, but a fatal issue is rare.

This disease was described from Accra (1915) under the name Bungpagga and was attributed by Patton to a fungus.

A.C[onnal] after consideration of these papers and others, including those of BUXTON and SAYERS, thinks that myositis and filarial abscess are separate entities.

Gray notes that the disease has been attributed to a fungus (PATTON), a pasteurella (BOUFFARD) and an entamoeba (SHARP and MORRISON). He regards it as a low grade pyaemia.

Johnson regards it as " pyaemia occurring in a race which has a high resistance to pyogenic organisms, in which local abscesses tend to occur instead of spreading cellulitis and lymphangitis, and pyaemia instead of septicaemia."

In 4 cases examined bacteriologically by E. C. Smith staphylococcus was obtained in each instance.

A. G. B.

HANZAWA (Shogoro). Zur Statistik der Myositis purulenta acuta mit besonderer Berücksichtigung ihres Erregers. [**Statistics of Myositis purulenta acuta with Special Reference to its Causative Agent.**]—*Mitt. u. Allgemeine Path. u. Pathologische Anat.* 1930. Vol. 6. No. 2. pp. 333–346. [34 refs.] [Surg. Clinic & Bact. Inst., Univ., Sendai.]

After stating that this disease is far more frequent in Japan than in Europe or North America and giving a short account of previous publications (of which 34 are noted, mostly from Japanese sources), the author discusses his 114 cases (127 muscles) and gives 9 statistical tables. All were operated on at the Sendai Clinic and bacteriologically examined at the Institute. The disease occurred in the 1st, 2nd and 3rd decades, and was commonest between the 10th and 19th years. It was twice as frequent in males as in females. The lesion was localized in the ilio-psoas (22 per cent.), shoulder muscles (18 per cent.), back muscles (12·5 per cent.), seat muscles (11·8 per cent.). Frequently-used bellied muscles seemed most affected. There was no preference between the body sides. In the case of 20 muscles a predisposing cause, such as contusion or tonsillitis, could be demonstrated ; in the other 107 none. In 123 instances there was infection by one bacillus, in 4 a mixed infection. In 109 cases the organism was *Staphylococcus pyogenes aureus*, in 10 *Streptocccus haemolyticus*. In the mixed infections the colon bacillus was associated with one of the others. In only seven per cent. of the cases was more than one muscle affected. [In the last respect at least this series differs from the tropical series.]

A. G. B.

BERGSMA (S.). **Elephantiasis of the Male External Genitalia—a Modification of the Usual Incision in the Operation for Elephantiasis of Scrotum and Penis.**—*Amer. Jl. Trop. Med.* 1930. May. Vol. 10. No. 3. pp. 199–206. With 3 text figs. [3 refs.] [American Mission Hosp., Addis Ababa, Abyssinia.]

The author advances yet another modification of the incisions usually employed in the operation for elephantiasis of the scrotum and penis. His paper deals only with cases of tumour which had attained to a very large size. In two of these, admirably depicted in photographs, the weight of the removed specimens was 72 and 45 lbs.

respectively. As the author states, and as all surgeons with practical experience of the subject are aware, in such cases the tumour by its weight drags down a sufficiency of skin (often normal and healthy, as in the author's cases) to provide material for covering the essential structures denuded in the course of operation.

An incision is first made from the opening of the urinary tract on the surface of the tumour to the glans penis. A transverse cut across the upper end of this extending laterally on each side to a distance of one-and-a-half to two inches follows. Then from the extremities of the latter two further vertical incisions, four inches in length, extend upwards towards the pubes. A flap is thus marked out for subsequent use in covering the penis when denuded.

The cords, testes, and penis are freed in the usual way from the mass of elephantoid tissue in which they are imbedded. Normal preputial lining, when present, is of course preserved. From the upper ends of the two vertical cuts the neck of the tumour is encircled by an incision which should keep about three inches in front of the anal opening, and the operation proceeds to completion much on ordinary lines which need not be detailed.

J. J. Pratt.

Low (G. Carmichael) & Dixon (D. Strangways). **Elephantiasis treated by Protein Shock.**—*Lancet.* 1930. Jan. 11. pp. 72–73. [Hosp. for Trop. Diseases, London.]

In 1928 W. E. Cooke published a note on an early case of elephantiasis treated with benefit by protein shock (see this *Bulletin*, Vol. 25, p. 997). The authors here publish five cases in some detail. In each a course of T.A.B. intravenous inoculations was given, up to 200 million organisms. In two cases of well-developed elephantiasis no improvement followed. In one in which the diagnosis was recurrent lymphangitis the result is unknown; in another there has been no recurrence of lymphangitis. The authors think it doubtful whether such treatment will be of permanent benefit, but recognize the importance of securing any degree of improvement in this troublesome disease.

A. G. B.

Chomereau-Lamotte (B.). L'électrothérapie, sous forme de galvanisation bipolaire dans le traitement de l'éléphantiasis. [**Electrotherapy in the Form of Bipolar Galvanization in the Treatment of Elephantiasis.**] -*Rev. Méd. et Hyg. Trop.* 1930. Mar.–Apr. Vol. 22. No. 2. pp. 61–66.

The author at Guadeloupe has treated 4 recent and 7 old cases of chronic oedema of the lower or, rarely, the upper limbs by this method, with favourable results in all the early cases and some of the later. He describes and recommends his technique.

A. G. B.

Quiyum (Md. Abdul). **A Case of Elephantiasis cured by Arrhenol.**—*Indian Med. Gaz.* 1929. Aug. Vol. 64. No. 8. p. 450.

An elephantiasis of the leg followed six months after an acute lymphangitis. Under six injections of arrhenol, given intravenously on alternate days, two of gr. ii and four of gr. iii, the hard painless non-pitting swelling had almost entirely disappeared. The blood was not examined.

Clayton Lane.

Alfredo (João). La sclérose curative dans deux cas de varices lymphatiques. [**Curative Sclerosis in Lymphatic Varix.**]—*Rev. Sud. Américaine de Méd. et de Chirurg.* Paris. 1930. July. Vol. 1. No. 7. pp. 689–691.

Like varicose veins, lymphatic vessels, the subject of permanent pathological dilatation, whatever the exciting cause of the enlargement may be, show structural alterations in their walls. In lymphatic varix consequently treatment by internal medication can never be followed by satisfactory results. Tumours dependent upon this condition have up to the present been dealt with surgically when necessary, but from the surgeon's point of view intervention is not always desirable and frequently presents difficulties. Favourable experience of curative sclerosis in the treatment of varicose veins has encouraged the author, a hospital physician at Pernambuco, to give this method a trial in two cases of lymphatic varix of the inguinal region, and of these he gives details. In both, though no measurements are noted, the tumours appear to have been of considerable size and to have corresponded with text-book description of varicose groin glands.

Treatment in the first case was commenced with a 10 per cent. solution of salicylate of soda in doses of 2 cc. injected locally. After the third injection, this dose was increased to 6 cc. of 20 per cent. solution. The total number of injections is not stated, but after a month the tumour had diminished in size, and was uniformly indurated throughout its whole mass. Seen a year later no signs of tumour were visible, and only on palpation c uld a slight local thickening be detected.

The second case was complicated by hernia, the cure of which was first effected. Treatment of the varix consisted of sixteen injections of 5 cc (strength of solution not give)—two injections weekly. When the patient was discharged from Hospital, the tumour was notably reduced in bulk, and hardened throughout. Two months later he was in excellent health, with the tumour showing still further shrinkage.

The salicylate solution may, it is stated, be injected alike into the vessels or the surrounding tissues, and the technique is said to be appreciably simpler than in the case of varicose veins. In the two instances reported the procedure employed was attended with no unfavourable symptoms or complications, either local or general.

J. J. Pratt.

Boyd (T. C.) & Roy (A. C.). **Chyluria : Some Biochemical Aspects.**—*Indian Jl. Med. Res.* 1929. Apr. Vol. 16. No. 4. pp. 973–985. With 4 graphs & 1 plate.

The author's conclusions are as follows :—

" (1) We have shown very fully the chemical constants of the fat present in cases of chyluria and that when on an ordinary hospital diet these constants vary to some extent.

" (2) We have also found that when cod-liver oil is administered there is a great deviation in these chemical constants particularly in the iodine value, butyrorefractometer value and melting point of the fat. In these respects the constants approach those of cod-liver oil.

" (3) We have failed to obtain any trace of liquid paraffin in the excreted fat when the diet contained this ingredient in the form of an emulsion with gum acacia.

" (4) We have also failed to find any optically active fat after the administration of hydnocarpus oil."

Clayton Lane.

Sanner. Les grosses hernies scrotales en pratique africaine. [**Large Scrotal Hernias in African Practice.**]—*Ann. de Méd. et de Pharm. Colon.* 1930. Jan.–Feb.–Mar. Vol. 28. No. 1. pp. 72–75. With 1 text fig.

The author comments upon the extreme frequency of large scrotal hernias amongst African races. He has found that in cases where the hernial sacs are at once voluminous (in capacity often exceeding several litres), and intimately and firmly adherent to surrounding structures text-book methods of radical cure are often difficult or impossible of application. Reserving classic procedures for simple cases, he divides those with which his paper deals into two classes :—

(*a*) Hernias in which the sac cannot be separated and obliterated, and the patient is old. Here he recommends Pauchet's method in which, after reduction of the hernia, the cord is tied " en masse " and the testicle sacrificed, with a view to the complete closure of the inguinal canal.

(*b*) Where the condition is similar but the patient young. In these his early operative steps differ from those of an ordinary radical cure only in the fact that no attempt is made to isolate the cord. The sac having been freely opened, its upper orifice leading into the abdominal cavity is surrounded by a purse-string suture, the stitches of which are so applied as to ensure that as much as possible of the chromic gut employed is outside the sac, care being at the same time taken to avoid inclusion of the vas deferens. Closure of the canal is then effected by Barker's method, the lower portion of the sac usually abandoned *in situ*, and the operation completed by prefunicular suture. Sometimes, however, the scrotal part of the sac can be dissected out with the aid of fine scissors. The author has practised this method with complete success in seven cases.

J. J. Pratt.

i. James (Wm. M.). **Do We see Gout in the Tropics ?**—*Eighteenth Ann. Rep. Med. Dept. United Fruit Company, Boston, Mass.* 1929. pp. 113–120. [9 refs.]

ii. Guardia G. (Tomas). **A Study of 980 Chemical Analyses of the Blood, with Special Reference to Hyperuricemia.**—*Ibid.* pp. 120–125.

i. After a description of gout as known for long in temperate climates, the author observes that true gout is so rare that in 24 years practice in Panama and the Canal Zone he has seen only two cases, both of them imported. In over 300,000 admissions to the Gorgas Hospital in 26 years only two cases of gout are recorded, one doubtful, and the other in a North American. Why true gout is so uncommon in the American tropics is obscure, but over 250 years ago Sydenham wrote " Travelling into southern countries is so effectual to conquer those diseases, the cure whereof is fruitlessly attempted in a colder climate."

ii. The author publishes tables, some by Berglund, others by himself, with a view to showing what relation, if any, exists between hyperuricaemia and certain symptoms which may or may not be due to gouty diathesis as seen in the American tropics, such as arthritis, paraesthesias (tingling, numbness, itching, coldness) and nodules in ears or elsewhere which might be taken for tophi. Berglund considers 6 mgm. uric

acid per 100 cc. of blood as the upper limit of normal. The tables fail to show the relation postulated. Where the uric acid concentration was above the limit, there was usually impaired renal function.

A. G. B.

BLANCHARD (M.). Les polysérites des indigènes coloniaux. [**Polyserositis of Natives of the Tropics.**]—*Rev. Prat. Malad. des Pays Chauds.* 1929. July. Year 8. Vol. 9. No. 7. pp. 303–306, 309.

In the African and Madagascan races which form the bulk of black troops in France, it is common to see several serous membranes attacked simultaneously or in succession by pathogenic organisms. These persons have acquired no immunity in childhood and hence are very susceptible to such infections and contract them violently. The form most frequently seen, whether primary or in succession to acute pneumococcal attacks, is that due to the tubercle bacillus. The usual syndrome is the glandular, with enlarged tracheobronchial and mesenteric glands, and the involvement of the pleura and peritoneum. The symptoms are described fully. The pericardium is the next serous membrane to be attacked. The author says that polyserositis, affecting pleura, peritoneum and pericardium, is a classical form of reaction of the black to the tubercle bacillus. Pneumococcal polyserositis almost always starts in the pleura, either during the development of the pneumonia or after defervescence. The effusion is often abundant enough to mask the pneumonia. Peritonitis and pericarditis follow. Meningitis is fairly common, arthritis not rare ; the arthritis is always purulent and is usually localized to the knee and shoulder. Empyema after the pneumonia is rare. Rheumatism is a much less frequent cause of polyserositis than tubercle and pneumococcus, and is of a milder character : the pleurisy is the most painful of those seen in the black. This form of polyserositis yields readily to salicylates. Chylous polyserositis of filarial origin is rare, and is limited to the pleura and peritoneum. Polyserositis seen in grave cases of ankylostomiasis and in beriberi is also mentioned. Lastly, it is noted that the frequency of polyserositis in natives is the outcome of the septicaemic state so often seen in them.

A. G. B.

DE ALMEIDA (Miguel Ozorio). Contribuição ao estudo experimental da physiologia pathologica do "mal de engasgo." [**Experimental Study of the Pathogeny of "mal de engasgo."**]—*Inst. Oswaldo Cruz. Supplemento das Memorias.* 1929. July 31. No. 9. pp. 146–151. [5 refs.]

This condition, which has repeatedly received notice in the *Bulletin*, is one of disturbance of deglutition from dysfunction of the oesophagus. Normally, the entrance of food causes peristaltic waves of contraction to pass until the food reaches the stomach. On section of the vagi in the neck, the presence of food results in peristalsis in the upper part of the oesophagus only, the lower part remaining flaccid and atonic till a large mass collects which presses on the trachea. If one vagus only was divided similar disturbance occurred at first, but soon passed off. The author, therefore, divided one vagus in dogs, and after an interval of 3 weeks some of the branches of the other. The result was the production of the clinical picture of "mal de engasgo." The dogs showed all the signs of hunger and ate ravenously, but the food accumulated in the lower part of the oesophagus

and might be rejected by vomiting. Death occurred in six weeks or so after progressive weakness and emaciation, in short, from starvation. It is not claimed that the condition is actually due to vagus interference, but seeing that the effect of the operations was to reproduce the clinical signs, it is hoped that this may help to throw light on an obscure problem.

H. H. S.

Peña Chavarria (A.) & Nauck (Ernest G.). El rinoescleroma en Centro-América. [**Rhinoscleroma in Central America.**]—Reprinted from *Rev. Méd. Latino-Americana.* 1929. Feb. Vol. 14. No. 161. 14 pp. With 9 text figs. [1 ref.] French summary p. 14.

According to the French resumé the authors note the great diffusion of rhinoscleroma in Central America especially in the higher and colder parts. In Costa Rica, whence they write, Indians are rare and the disease is equally so. They record two cases in Costa Ricans in which a combined treatment by X-rays and tartar emetic injections had a good result (photos). Frisch's bacillus was always present, in the deep parts of abstracted tissues. Surgical treatment had no success, but the medical treatment is advocated strongly. A. G. B.

Sharples (L. R.) **The Conditions of "Burning Feet" or "Foot Burning" in Labourers on Sugar Plantations in the Corentyne District of British Guiana.**—*Jl. Trop. Med. & Hyg.* 1929. Dec. 16. Vol. 32. No. 24. pp. 358–360.

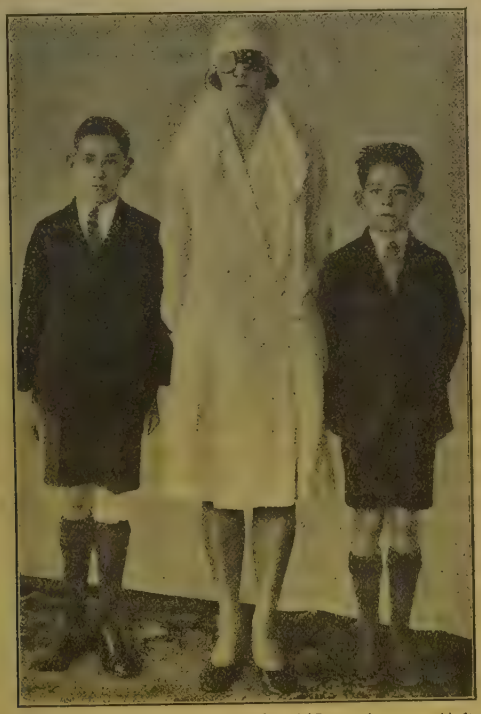
Burning feet or foot burning has been described by the author from labourers on sugar plantations. They are Hindus (Bengalis born in British Guiana) and the subjects are nearly always females between the ages of 17 and 40 years; it has never been noticed among Madras labourers. There is complaint of intense burning of the soles when walking with, in severe cases, a similar condition of the palms, especially the finger tips accompanied frequently by dimness of vision. Work has to be dropped for weeks at a time. Examination of the patient reveals nothing distinctive. Points on the soles are hypersensitive to touch and pin-prick. There is no paresis or wasting. The cause is believed to be dietetic deficiency. Polished rice is the staple food and, after cooking, superfluous water is thrown away. The Madras East Indian saves the water and flesh of sheep or goat is eaten at least once a week. The Chinese never suffer from this affection, and the author describes their system of cooking rice, whereby all the water is absorbed. Under a generous diet the patients rapidly improve. [No cause is suggested for the sex incidence. For previous papers see this *Bulletin*, Vol. 26, pp. 423–4.] A. G. B.

Croll (D. Gifford). **The Incidence of Chronic Nephritis amongst Young People in Queensland.**—*Med. Jl. Australia.* 1929. Aug. 3. 16th Year. Vol. 2. No. 5. pp. 144–145. With 1 chart in text.

Nye (L. J. J.). **An Investigation of the Extraordinary Incidence of Chronic Nephritis in Young People in Queensland.**—*Ibid.* pp. 145–159. With 5 text figs. [29 refs.] [Summary appears also in *Bulletin of Hygiene.*]

Dr. Croll brings out statistically (by tables and a chart) that 884 deaths in persons under the age of forty years from chronic nephritis were due, in Queensland, to an unknown cause, which either does not exist or does not operate to the same extent in the other States, during

the years 1917 to 1926 per 800,000 of population. These he regards as conservative figures. Dr. Nye takes up the tale and shows that the unknown cause referred to is lead poisoning contracted by children confined, as they are, on verandahs painted with white lead paint. What happens after the painting is that the siccativing action of the sun dries up the oil and leaves the paint in the form of a chalky powder. The oil medium becomes oxidized by exposure to weather and sunlight.



Two brothers, aged 17 and 15; height, 145 centimetres (4 ft. 10 in.) and 138 centimetres (4 ft. 7½ in.) respectively; both nail-biters, and both having well-established chronic nephritis, but no previous history of lead poisoning.
[Reproduced from "A Study of Chronic Nephritis in Queensland," by L. J. Jarvis Nye.]

(Privately printed for the author by the Australasian Medical Publishing Co., Ltd., Sydney. 23 pp., 11 figs., 68 refs. 1930(?).)

The children, confined in the narrow space of the verandah, spend much time in holding on to the railings to watch the passing show, and thumb sucking and biting the nails are believed to do the rest. Moreover, when it rains children enjoy imbibing the drops underneath the rails. All this is proved by the findings in twelve cases of definitely proved lead poisoning in early life which are cited as examples.

The above are the essential facts of this paper and it will suffice to say that Nye discusses alternative possible causation of the chronic nephritis and describes the clinical symptoms and pathology of lead poisoning.

[J. L. Gibson, it may be remembered, published a startling article (in so far as that he attributed the cases to this same cause) on "Plumbic

Ocular Neuritis in Queensland Children" (*Brit. Med. Jl.* 1908, Nov. 14, p. 1488). Dr. Nye does not, as he might have done, state that 2 milligrams of lead (1/32 of a grain) absorbed daily will in time cause chronic lead poisoning of which chronic nephritis is the most important sequela. His last words are "surely herein lies an extraordinary opportunity for preventive medicine." Recent inquiry shows that combinations of paint materials are more durable and resistant to the weather than if compounded of one material alone. Thus, if substitutes for the highly toxic white lead paint are demanded, if titanium white or paints on a zinc basis do not last, then mixtures of the two will. Although I have examined thousands of workpeople in factories coming into contact with lead compounds and have all the time been on the look-out for nail-biters, I was never able to satisfy myself that they showed greater evidence of lead absorption than those who were not.]

T. M. Legge.

Armand-Delille (P. F.), Hurst (Arthur F.) & Sorapure (V. E.). Hyperleucocytose éosinophilique d'origine tropicale chez l'enfant. [**Eosinophilia of Tropical Origin in the Child.**]—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1930. May 19. Year 46. 3rd Ser. No. 16. pp. 768–773. [3 refs.]

Two cases are described. The first was that of a boy of 13 years born at Tahiti where he passed 8 years; he then went to Réunion, where he had malaria in 3 successive seasons. During his last year there he had attacks of urticaria and then of asthma. It was for this cause that he was brought to the senior author in France, where blood examination showed 76 per cent. eosinophiles. Examination of the stools at the Pasteur Institute revealed ascaris and oxyuris for which treatment was given. Later, trichuris infection was treated without effect on the eosinophilia. In 5 blood examinations the eosinophiles were 4 times 76 and once 85 per cent. (35,000 leucocytes).

The second case was in a boy of nine years, the second of a family of 7 children born in Venezuela where he lived to the age of 5 when he went to New York and then to France. He was there found to have an eosinophilia of 52 per cent. (leucocytes 22,000). Search of the stools for helminth ova was negative. The child was then taken to London to the second and third authors who confirmed the eosinophilia. Again no evidence of parasites in stools or blood was obtained. Liver and spleen were normal and X-rays revealed nothing. On other occasions the eosinophilia varied between 52 and 60 per cent. Examinations of day and night blood for filaria were negative. At the suggestion of the English authors the other members of the family were examined with the following findings:—

Names.	*Eosinophiles per cent.*
M. B. (father)	7, 6.
Mme. B. (mother) ...	5, 4.
Aloise B. *aet.* 11 ...	10, 6, 11, 14, 13.
John B. ,, 9 ...	5, 0·5 (New York), 53, 54, 51, 51, 52, 60, 60, 52, 37 (measles).
Priscilla B. ,, 8 ...	17, 14, 21.
Jimmy B. ,, 6 ...	27, 25, 19.
Jane B. ,, 5 ...	20, 27, 15.
William B. ,, 4 ...	4, 2.
Patricia B. ,, 2 ...	2, 2·2.

The parents and 5 children had lived in Venezuela ; the two youngest were born in New York. All were examined for parasites and on one occasion for *Strongyloides intestinalis* but without success.

The authors think that the cause is an undetected parasite [see also this *Bulletin*, Vol. 26, p. 543 DE LANGEN].

A. G. B.

HORN (L.) & KAUDERS (O.). Immunitätsstudien bei Malaria- und Recurrensinfektion. [**Immunity Studies in Malaria and Relapsing Fever.**]—*Klin. Woch.* 1930. Jan. 25. Vol. 9. No. 4. pp. 164–166. [12 refs.] [Psychiat. Clinic, Vienna.]

Incidentally, in the course of experiments the authors observed that the inoculation of mice with cerebrospinal fluid from cases of general paralysis treated by malarial therapy produced an inhibiting influence on a subsequently induced relapsing fever infection in these animals. This observation led them to investigate the matter systematically in a special series of experiments. [The species of treponema used in the experiments is not stated.] In the control experiments the cerebrospinal fluid from untreated cases of general paralysis and cases treated with typhoid vaccine to produce a rise of temperature was employed. They find that the most active immunizing action, both in the case of the cerebrospinal fluid and blood serum from cases of general paralysis treated with malarial therapy, develops during the febrile paroxysm, and the cerebrospinal fluid has a stronger immunizing action than the blood serum. The cerebrospinal fluid of control cases had no immunizing action against the spirochaetal infection. These interesting and important observations lead the authors to hope that they may be able to work out an immunity test method by preliminary immunization with body fluids taken during the febrile attack and subsequent inoculation of the animal with spirochaetes. By using such a method they hope to be able to evaluate experimentally the various methods of producing fever employed in the treatment of general paralysis.

E. D. W. Greig.

RHO (Filippo). **Testicular Extracts in the Topical Treatment of Various Ulcers.**—*Jl. Trop. Med. & Hyg.* 1930. Apr. 15. Vol. 33. No. 8. pp. 103–105. [31 refs.]

Professor Rho writes :—

" In 1890, the Neapolitan surgeon, Aievoli, discovered for the first time that healing of long-standing ulcers was hastened by the application of thin slices of the testicles of guineapigs and rabbits.

" In 1918, VORONOFF obtained similar results of rapid healing by the use of testicular pulp. Later, numerous investigators in various countries obtained similar results by using simple testicular extracts. The author is able to confirm the accuracy of these statements by his own personal experience. He therefore calls the attention of tropical practitioners to the subject and suggests that this new method be given a trial in the treatment of various tropical ulcers."

He suggests the trial of this method in septic ulcers caused by neglected wounds, in atonic chronic ulcers, and in diphtheroid ulcers, in each case after the application of bland antiseptics. He has used on his own person a glycerinated extract called " orchitasi," prepared by Serono.

A. G. B.

DHUNJIBHOY (Jal Edulji). **A Brief Résumé of the Types of Insanity commonly met with in India, with a Full Description of "Indian Hemp Insanity" peculiar to the Country.** *Jl. Mental Sci.* 1930. Apr. Vol. 76. No. 313. pp. 254–264. [5 refs.]

Excluding the Indian States the accommodation for mental patients in India roughly numbers 10,000, an extraordinarily low figure. According to the last census the proportion of the insane to the general population is 28 or 29 per 100,000 persons. This is probably a gross underestimate. The types of insanity appear to be much the same as those observed in the West. Among the toxic psychoses that due to hemp is the commonest. The psychosis is almost confined to the male sex and usually occurs between the ages of 20 and 40. Hemp is used in the forms of ganja, bhang and charas*. It is a very general custom to consume bhang on social festive occasions and its consumption is also in some places connected with religious rites. The effect of a moderate dose is to produce drowsiness, a dream state with a rapid flow of ideas, often of a sexual nature, and ultimately sleep. In larger doses there occur excitement, delusions, hallucinations, activity with a tendency to violence, ecstacy and deep sleep followed by forgetfulness of all but the initial symptoms. This is of importance from the medico-legal point of view. Three types of hemp insanity are met with: acute mania, chronic mania and dementia. The prognosis where the taking of the drug can be stopped is good. In acute cases nearly 90 per cent. and in chronic cases 40 per cent. recover. The drug can be stopped at once as no abstinence symptoms occur and for the rest symptomatic treatment only is required.

E. D. Macnamara.

FRANCO (Enrico Emilio). Leishmaniosi viscerale e bilharziosi della vescica e del retto in un uomo di ventiquattro anni. [**A Case of Visceral Leishmaniasis and Urinary Schistosomiasis.**] Reprinted from *Boll. Soc. Ital. Med. ed Igiene Colon.* (Supplement to Fasc. 3 of *Giorn. di Clin. Med.*). 20 pp. With 5 figs. on 4 plates. [15 refs.] [Inst. of Anat. & Path. Histology, Univ., Sassari.]

This is recorded as the first case of adult kala azar observed in Portugal. A negro, 24 years of age, came to hospital with enlarged liver and spleen and ascites. The mucous membranes were pallid, he was passing blood from nose, bladder and rectum, and had an ulcerative balanitis. He was born in Mozambique but was brought to Lisbon at the age of two years. L.D. bodies were found in a blood-smear, and in the large mononuclear and polymorphonuclear leucocytes. The patient was an alcoholic and had contracted syphilis at the age of 18. The enlargement of the liver was ascribed to a combination of the three conditions, alcohol, syphilis and kala azar. Laboratory examination of the urine had not revealed any schistosome ova, but a cystitis and proctitis due to *S. haematobium* were found at autopsy. The ova were found also in the renal tubules. A very full account of the post mortem findings, macroscopic and histological, is given, but merely elaborates what is here stated.

H. H. S.

*Ganja is the dried plant which has flowered and from which the resin has not been removed. Bhang is the larger leaves and capsules with the stalks. Charas is the resinous matter collected separately. Ganja and charas are chiefly used for smoking, bhang is usually taken as a decoction.

Tanzer (Francesco). Sull'influenza della spirochetosi da *Sp. hispanica* sulle tripanosomiasi da *Tr. equinum*, *Tr. brucei*, *Tr. evansi*. **The Effect of *Treponema hispanicum* on Inoculated Trypanosomiasis.** [— *Arch. Ital. Sci. Med. Colon.* 1930. Feb. 1. Vol. 11. No. 2. pp. 91–103. English summary (5 lines) p. 103. [Inst. of Trop. Path., Univ., Bologna.]

The author injected rats with relapsing fever organisms and at various intervals thereafter, at the first febrile attack, or the second, or later, inoculated them with *Trypanosoma equinum*, *T. brucei*, and *T. evansi*. The results are presented in tabular form and are somewhat variable, but may be summarized by stating that the *Treponema hispanicum* has an inhibiting effect on the trypanosomes, delaying their development. If the two are inoculated together this is clearly seen, but if trypanosomes are injected after the second febrile exacerbation of the relapsing fever there may be no inhibition.

H. H. S.

Berret (H.). Etude comparative entre le béribéri et l'ankylostomiase. [**Comparison of Beriberi and Ankylostomiasis.**] *Bull. Soc. Méd.-Chirurg. Indochine.* 1929. June. Vol. 7. No. 6. pp. 306–315. [14 refs.]

The author discusses the points of resemblance of beriberi, ankylostomiasis and malarial cachexia and expresses the opinion that if microscopic examinations were regularly made in Indo-China much beriberi would be transferred to one of the other disease-headings.

A. G. B.

Schilling (Claus). Der gegenwärtige Stand der Chemotherapie, besonders der Tropenkrankheiten. [**The Present Position of Chemotherapy with Special Reference to Tropical Disease.**] — *Deut. Med. Woch.* 1930. June 6. Vol. 56. No. 23. pp. 955–958. [Robert Koch Inst., Berlin.]

Recent observations have shown how important is the distribution of the remedy between the several organs of the body: e.g., quinine is first stored in the red corpuscles and then quickly disappears from the circulation; arsenic penetrates little into the central nervous system and therefore has small effect on parasites in the brain; bismuth is stored in the reticulo-endothelial system. Syphilis causes different body reactions in its various stages: at first fever, then in turn manifestations in the skin, gummata, tabes or G.P.; treatment must be adapted to these changes. The author suggests that this variation in reaction should be taken into account in the drug treatment of chronic trypanosomiasis.

Turning to the manner of action of the aetiotropic agent he notes that some act directly on the parasites, as certain dyes which cause the blepharoplasts of trypanosomes to disappear. The solvent is of importance; the author and Goretti found that tartar emetic dissolved in normal serum is a much stronger trypanocide than when dissolved in water. Kroó has recently shown that the concentration at which the remedy is introduced is of great importance; 0·2 gm. quinine was more effective in 200 cc. of normal salt solution than in 1 cc.; similarly with neo-salvarsan, which is explained by its more rapid oxidation in greater dilution (this *Bulletin*, Vol. 25, p. 494). Just as insoluble salts of mercury have been used in syphilis for their depôt action, so can germanin be employed; it is bound to the cells and yielded gradually to the body fluids. Uhlenhuth & Seiffert

have found that the repeated administration of doses below the curative are effective [*l.c.* Vol. 26, p. 672; see also Vol. 25, p. 343.]

The fact that some remedies inert *in vitro* are active *in vivo* can be explained by their conversion in the body into an active compound. Some organs may be less efficient than others in this respect; *e.g.*, parasites might be eliminated in the bone marrow where conversion was energetic, and spared in the lymphatic glands where it was less effective; the parasites which were spared would initiate a relapse.

The indirect action of a remedy may come about through the mobilization of protective substances normally present. Such are some of the points of an interesting paper.

A. G. B.

GIEMSA. Neuere Ergebnisse der Chemotherapie. [**Recent Developments in Chemotherapy.**]—Reprinted from *C.R. Congrès Internat. de Méd. Trop. et d'Hyg., le Caire, Egypte. Dec. 1928.* Vol. 2. pp. 299–307.

This lecture, and the discussion which followed it, deal with synthetic drugs introduced in recent years for the treatment of tropical diseases and cover ground with which readers of this *Bulletin* are already familiar.

T. A. Henry.

ROSENTHAL (Sanford M.) & VOEGTLIN (Carl). **Biological and Chemical Studies of the Relationship between Arsenic and Crystalline Glutathione.**—*Jl. Pharm. & Experim. Therap.* 1930. July. Vol. 39. No. 3. pp. 347–367. With 1 fig. & 4 charts in text. [15 refs.] [Hyg. Lab., U.S. Public Health Service, Washington.]

The authors have thought it desirable to repeat and extend the work done by VOEGTLIN, DYER and LEONARD (this *Bulletin*, 1924, Vol. 21, p. 414) using for that purpose the crystalline reduced glutathione, now available by the methods of Hopkins and of Kendall, instead of the amorphous material of the former investigations.

It is again shown, by *in vitro* experiments, that glutathione is able to protect trypanosomes against the toxic action of either arsenious acid (white arsenic) or 3-amino-4-hydroxyphenylarsenious oxide; protection against the latter is complete when the concentration of glutathione is 10 times that of the arsenic compound; but even more is needed against arsenious acid, though the latter has only 1/200 the trypanocidal activity of the former. The protected trypanosomes are not only motile, but also infective for rats. Rats are also protected against the same two arsenic compounds by previous injection of glutathione, acute toxic reactions being prevented. Similarly, the local inflammation produced by subcutaneous injection of arsenic solutions is inhibited if the solutions also contain glutathione. The two arsenic compounds do not inhibit the oxidation of reduced glutathione by molecular oxygen in the presence of haemin, as an iron catalyst, unless the arsenic is present in concentration nearly equal to that of glutathione. The experimental data available relating to the mechanism of the action of arsenic on living organisms are discussed and the view is put forward that the action of tervalent arsenious oxides on certain living cells involves a chemical reaction with reduced glutathione, and possibly with other reduced sulphur compounds of protoplasm.

T. A. Henry.

Chopra (R. N.) & Choudhury (S. G.). **The Rôle of Surface Tension on the Activity of Cinchona Alkaloids.**—*Indian Jl. Med. Res.* 1929. Oct. Vol. 17. No. 2. pp. 360–365. With 1 graph in text. [13 refs.] [School of Trop. Med. & Hyg., Calcutta.]

Measurements of the surface tension of solutions of quinine at concentrations 1 in 4,564, 1 in 10,000 and 1 in 41,250 show that this constant decreases as the value of the pH is increased by the addition of a suitable buffer solution. The authors have pointed out previously that in the administration of quinine this implies that in presence of alkali there will be greater concentration of alkaloid at the interface where adsorption takes place, and this explains Acton and Chopra's observation that the concentration of quinine in mesenteric blood can be nearly doubled by administration in presence of alkali. Apart from this lowering of surface tension it is possible that in presence of free hydroxyl ions the negative charge of cells is increased and so induces greater adsorption of the positively charged alkaloid.

T. A. Henry.

i. Goodson (J. A.) & Henry (T. A.). **The Assay of Mixtures of Cinchona Alkaloids.**—Reprinted from *Pharmaceutical Jl.* 7 pp. [1 ref.]

ii. —— & ——. **The Composition of Cinchona Febrifuge.**—*Quarterly Jl. Pharm. & Pharmacol.* 1930. Apr.–June. Vol. 3. No. 2. pp. 238–248. [13 refs.] [Wellcome Chemical Research Labs., London.]

i. This paper deals with the composition of the total alkaloids of five samples of cinchona bark from Tanganyika Territory. The barks were of two types, viz., two *Cinchona succirubra* barks and three hybrid barks, presumably from *C. succirubra* and *C. Ledgeriana*. In the latter the proportion of quinine to cinchonidine is normally about 5 to 1, but in one of these three specimens, the proportions, determined by Howard and Chick's process, were about equal, as they usually are in *C. succirubra* bark, though the total alkaloids were higher, viz., 10·2 per cent. as against 7 to 8 in *C. succirubra* bark. Detailed examination of the alkaloids in this anomalous specimen showed that the percentages of quinine and cinchonidine were 3·07 and 2·05 per cent. respectively, and hence it is concluded that in this particular bark, the influence of the *C. succirubra* stock was dominant over that of the *C. Ledgeriana* graft.

ii. The paper begins with a critical examination of the published analyses of nine samples of cinchona febrifuge, 5 Indian, 2 Javanese, and 2 European in origin. Of these, 2 belong to the " quinetum " type, and contain about 80 per cent. of crystallizable alkaloids, 5 are of the " cinchona febrifuge " type and contain about 50 per cent. of crystallizable alkaloids and 2 are below this standard, and are perhaps of the type described by MacGilchrist (*Indian Jl. Med. Research* 1914–15, Vol. 2, p. 336) as " residual alkaloid."

The authors examined three febrifuges ; two (A and B) supplied by the Health Section of the League of Nations and one (C) purchased in London. The analyses were made in the first instance by the Howard and Chick process and subsequently by Chick's recent modification of this process. The crude " quinine sulphate," " cinchonidine tartrate,"

" quinidine hydriodide " and " cinchonine " obtained in these processes were examined by determinations of methoxyl and optical rotation and in this way corrected values for the four alkaloids obtained. The final results are as follows :—

	A.	B.	C.
Quinine	15·6	1·8	5·5
Cinchonidine	16·9	1·5	4·7
Quinidine	3·9	4·3	5·4
Crystallizable cinchonine	15·5	17·5	36·2
Total crystallizable alkaloids ...	51·9	25·1	51·8
Amorphous alkaloids (Quinoidine) ...	32·6	58·8	38·4
Ash	10·3	4·5	2·8
Moisture	3·9	7·3	1·8
Organic impurities (by difference) ...	1·3	4·3	4·9

It is considered that Chick's modification of the Howard and Chick process gives reasonably good results for quinine, cinchonidine and quinidine, when the allocation of the fractions is checked and corrected by these means, but there is as yet no satisfactory method for estimating cinchonine and in the present instance, the amount of pure cinchonine which can be crystallized out of the crude fraction is recorded. Samples A and C are to be regarded as cinchona febrifuges proper, but B is below standard and should be classed as " residual alkaloids."

T. A. Henry.

Dawson (W. T.) & Garbade (Francis A.). **Idiosyncrasy to Quinine, Cinchonidine and Ethylhydrocupreine and Other Levorotatory Alkaloids of the Cinchona Series : Preliminary Report.**— *Jl. Amer. Med. Assoc.* 1930. Mar. 8. Vol. 94. No. 10. pp. 704–705. [11 refs.] [Pharmacol. Dept., Univ. of Texas, Galveston.]

One of the authors having exhibited symptoms of quinine idiosyncrasy, the opportunity has been taken to try his susceptibility to laevorotatory and dextrorotatory series of cinchona alkaloids by means of Boerner's skin test.* Idiosyncrasy proved to be present in general to the laevo- but not to the dextro- forms : i.e., it was exhibited, e.g, with quinine and cinchonidine, but not with quinidine or cinchonine. Prior injections of adrenalin did not modify the effects. There were a number of exceptions ; thus idiosyncrasy was present to ethylhydrocupreine, but not to *iso*amylhydrocupreine (eucupin), *iso*octylhydrocupreine (vuzin), or 5-nitrohydroquinine, though these and others, also inert, are laevorotatory. In these exceptional cases the dextro-isomerides, where they were tried, were also unable to produce symptoms. The results of the skin tests were confirmed by oral ingestion of quinine and cinchonidine, which produced symptoms, and of quinidine and cinchonine which did not. It is suggested that before administering

* Quinine bisulphate, preferably in dilution of 1 : 10, is applied to a scarification. In susceptible persons oedema and erythema result, reaching a maximum in 15 minutes (*Jl. Amer. Med. Assoc.* 1917, Vol. 68, pp. 907–8.)

ethylhydrocupreine in pneumonia or quinine intravenously, Boerner's skin test should be used. In two other cases in which quinine had produced urticaria the application of Boerner's test gave negative results with quinine, quinidine, cinchonine, and cinchonidine. A positive Boerner's test would probably imply that a patient would experience great discomfort from administration of the drug, but a negative result does not mean that urticaria may not occur. Information supplied by manufacturers indicates that in practice there is complete separation of the laevo- and dextro- rotatory alkaloids and a number of previous instances are quoted in which cinchonine or quinidine has been substituted successfully for quinine in the treatment of malaria.

T. A. Henry.

Dawson (W. T.) & Garbade (Francis A.). **Idiosyncrasy to Quinine, Cinchonidine and Ethylhydrocupreine and Other Levorotatory Alkaloids of the Cinchona Series : Further Chemical Delimitation of the Idiosyncrasy ; Alteration in Sensitiveness.**—*Jl. Pharm. & Experim. Therap.* 1930. Aug. Vol. 39. No. 4. pp. 417–424. [22 refs.] [Med. School, Univ. of Texas, Galveston.]

This is a continuation and extension of work already reviewed. (See above). Quitenine, produced by the oxidation of the vinyl group of quinine to a carboxyl group gave negative results, but on esterification of the carboxyl group, e.g., in ethyl,-*n*-amyl-, and *iso*amyl- quitenines, activity is recovered and all these gave positive tests. In the previous paper it was recorded that ethylhydrocupreine gave positive and amylhydrocupreine negative results. The two intervening homologues, *iso*propyl- and *iso*butyl- hydrocupreines, have now been tried and found active, the amyl- homologue being still inactive (January 9 or 11, 1930). On repeating the comparative test on March 20th, 1930, the amyl- homologue proved active but less so than the *iso*butyl compound. This appears to be due to increased sensitivity of the subject, in whom headache ensued in a few minutes after the test on March 20th, whilst formerly it did not develop until 2 or 3 hours after the tests. It is interesting to note that activity appears to cease beyond amylhydrocupreine, since the *n*-hexyl, *iso*octyl and *n*-dodecyl- homologues all gave negative results on March 20th.

Cupreine and apoquinine both proved active, but 5-nitro- and 5-amino- hydroquinine gave negative results, though they are both laevo-rotatory. Quinamine, like all the dextro-rotatory cinchona alkaloids tried, was inactive. Quinoline gave a positive result whilst " plasmoquin " (N-diethylamino*iso*pentyl-8-amino-6-methoxyquinoline) gave a negative test. Quinicine and cinchonicine gave positive tests even with normal subjects and it is suggested that these amorphous alkaloids are possibly the cause of the " quinine eczema," which sometimes occurs among workers in quinine factories. Sensitivity to quinine, in the particular subject studied, is considerable ; a narrow, but recognizable wheal is produced by a 1 in 5,000 solution of the hydrochloride, whilst a saturated solution of quinine base (1 in 1,500) gives a wheal of about the same width as a 1 per cent. solution of the hydrochloride. Histamine solution (1 in 1,000) produces in this subject, as in normal persons, a whitish wheal surrounded by a zone of erythema.

T. A. Henry.

Manoussakis (E.). Une méthode pour éviter les troubles quiniques de nature idiosyncrasique. [**A Method of overcoming Quinine Idiosyncrasy.**]—*Bull. Acad. Méd.* 1930. Apr. 29. 94th Year. 3rd Ser. Vol. 103. No. 17. pp. 458–461.

The author briefly records 4 cases of quinine idiosyncrasy, all in soldiers. In two it took the form of fever and erythema so intense that the diagnosis of malignant scarlatina was at first made. One patient became dyspnoeic with dusky extremities and oedema of head and limbs. The other two developed haemoglobinuria after small doses, and in one of these this had been the invariable sequel, so that his malaria was left untreated. The author at first tried chloride of calcium and adrenalin and then the method of very small doses of quinine, but without effect. He then tried mixing the dose with the patient's blood before administration. He found that if 0·20 gm., a quantity which had caused violent symptoms, was mixed with the blood 10 hours before injection, no disturbing symptom followed. The blood of another subject was ineffective and when an interval of 3 days occurred between doses the symptoms recurred.

It was requisite that all the quinine of the preceding dose should not have been eliminated. As long as administration was daily there was perfect tolerance. The secret of dealing with such cases is to give each dose before the previous one has been all excreted.

A. G. B.

i. Fourneau (E.), Tréfouel, M. & Mme., Stefanopoulo (G.), Benoit (G.), de Lestrange (Y.) & Melville (Kenneth I.). Contribution à la chimiothérapie du paludisme. Essais sur la malaria des canaris. [**Contribution to the Chemotherapy of Malaria. Experiments on the Malaria of Canaries.**]—*Ann. Inst. Pasteur.* 1930. May. Vol. 44. No. 5. pp. 503–533. [51 refs.] [Pasteur Inst., Paris.]

ii. ——, —— & Benoit (G.). Préparation de dérivés en vue d'essais thérapeutiques. I. Amino-alcools. II. Dérivés de l'atophan. III. Dérivés du carbostyryle. IV. Dérivés quinoléiniques et quinoléine arsinique. [**Preparation of Compounds for Therapeutical Experiments. I. Amino-alcohols. II. Derivatives of Atophan. III. Derivatives of Carbostyril. IV. Derivatives of Quinoline and Quinoline-Arsinic Acids.**]—*Ibid.* June. No. 6. pp. 719–751. [Refs. in footnotes.]

i. The paper begins with a discussion of bird malaria as a means of comparing and testing anti-malarial drugs. It is pointed out that the one relatively constant factor is the length of time which elapses before malarial parasites appear in the blood of birds, when they are all infected with the same parasitized blood. Out of 200 birds infected, 80 per cent. showed parasites between the 3rd and 8th days and 20 per cent. after the 8th day; 2 proved to be carriers and never showed parasites, whilst 12 developed mild infections (infections larvées). Of the 47 birds not used for tests, 35 finally retained a latent infection and 12 died. From this preliminary study it is concluded that bird malaria may follow either of the following courses: (*a*) Rapid increase of the number of parasites to 30 to 80 per field in the course of 4 to

10 days ; this violent infection may last 5 to 10 days leading either to the death of the animal or ceasing abruptly and leaving the bird a carrier, or (*b*) a mild infection may develop in which the number of parasites varies from 1 per 100 fields to 1 per 2 fields or rarely 1 per field, and this state may last 4 or 5 days or months. This kind of infection is useless for chemotherapeutical work and usually supervenes on an early progression such as the following : 1st day, 1 per 100 fields ; 2nd day, 1 per 10 fields ; 3rd day, 1 per field.

The activity of a drug is not proportional to the dose given and is repressive rather than definite. In no case has a cure been observed. Birds apparently cured may show no parasites in the blood for months, though they retain some, which may either produce a violent attack or subside into a latent infection.

In the actual trials, infection was made by the Sergents' method, and the drugs were administered either subcutaneously (Edm. and Et. Sergent) or orally (a modification of Roehl's method). Both " curative " and " preventive " trials were carried out. Comparative trials were first made of drugs of known anti-malarial value, viz., plasmoquin, quinine hydrochloride, quinine-stovarsol and methylene-blue.

The detailed protocols in the original should be consulted, but the following points of general interest may be quoted. The dosage figures are in milligrams. Plasmoquin, subcutaneously, begins to show some effect at a dose of 0·004 and the smallest dose leading to the final latent infection is 0·06. For quinine and quinine-stovarsol the smallest doses producing latent infection are 0·5 and 0·1, respectively, for the curative method by the mouth, and 0·25 and 0·5 for the preventive method by the mouth. Applied subcutaneously and curatively; for quinine 0·5, quinine-stovarsol 0·8 ; subcutaneously and preventively : quinine 0·2, quinine-stovarsol 0·8 ; for methylene blue the results are inconclusive.

A list, with constitutional formulae, of an extensive series of synthetic compounds prepared by the authors and tried in bird malaria is given. This list is of great interest to workers in chemotherapy, but there is no point in reproducing it here. Most of these compounds gave negative results, but a few showed slight action and, therefore, merit further attention as points of departure for new synthetic work.

Among known compounds stovarsol, parosan oxide, *m*-amino-phenylstibinate of sodium, Bayer 205, mercurochrome, harmine, pyrethrin and chinosol, some of which have been used in human malaria, proved inactive.

ii. In this paper, which is of purely chemical interest, the authors deal with the preparation of the various compounds used in the bird malaria trials described in the first paper reviewed above.

T. A. Henry.

Nag (S. C.). **Quinine " Addiction."**—*Indian Med. Gaz.* 1930. June. Vol. 65. No. 6. p. 330.

Two cases are briefly described in which an interruption of the habit of taking a 5 grain quinine tablet daily at tea time, was followed by headache and uneasiness, and in one case " feverishness," relieved by resumption of the quinine.

A. G. B.

Roberts (M. A. W.). **Case of Death under Anaesthesia following Prolonged Administration of Antimony Salts.**—*Kenya & East African Med. Jl.* 1930. May. Vol. 7. No. 2. pp. 54–55.

The case of a native under operation for piles just after completing a course of 19½ grains of antimony tartrate for schistosomiasis. He collapsed after half a drachm of chloroform. The author attributes the death to the depressant effect of antimony, but the editor suggests that the chloroform may have deteriorated.

A. G. B.

Cawston (F. G). **Intravenous Injections of Tartar Emetic.**—*Kenya & East African Med. Jl.* 1930. Jan. Vol. 6. No. 10. pp. 309–310.

The author prefers potassium to sodium in the use of salts of antimony for schistosomiasis. For school children he dissolves 1½ grains of tartar emetic with an equal quantity of sodium chloride in 3 cc. of boiling water just before injection; toxic effects are rare.

A. G. B.

MacMahon (H. E.) & Weiss (S.). **Carbon Tetrachloride Poisoning with Macroscopic Fat in the Pulmonary Artery.**—*Amer. Jl. Path.* 1929. Nov. Vol. 5. No. 6. pp. 623–630. With 9 figs. on 2 plates. [11 refs.] [Boston City Hosp., & Harvard Med. School, Boston.]

A labourer was admitted semicomatose to hospital with abdominal pain, persistent nausea, vomiting and jaundice. For 4 years he had had periodical alcoholic debauches, the usual beverages being "Noonan's Hair Petrol" and denatured alcohol. Three days before admission he drank about an ounce of "Carbona" (carbon tetrachloride) in milk. In hospital he became completely comatose and died after 48 hours. Autopsy was performed six hours later.

"1. The gross and microscopic findings are described in an unusual case of carbon tetrachloride poisoning in which the blood in the right side of the heart and larger pulmonary arteries contained an extremely high percentage of fat (60 per cent.).

"2. The severe damage to the liver, which was already large and filled with fat, was the probable source of the fat in the vascular system.

"3. Fat droplets that were small enough to pass through the capillaries of the lung and to gain entrance into the capillaries of other organs produced no microscopic lesions in either the heart, brain or kidney.

"4. It appears from these observations that the sensitiveness of alcoholic patients to carbon tetrachloride is increased not only because of increased absorption of the drug, as well as the synergistic action of alcohol and carbon tetrachloride together in producing liver damage, but also because of the possible presence of pre-existing liver damage."

A. G. B.

Lane (Clayton). **Fatal and Medicinal Doses.** [Correspondence.]—*Lancet.* 1930. June 14. p. 1317.

Draws attention to the fact that though 1·5 cc. of carbon tetrachloride has proved fatal the dose advised and widely used in hookworm infection is 3 cc. This "has naturally killed a varying proportion of those who have taken it." Moreover, some of these persons were probably not in need of treatment, being the victims of herd treatment without individual diagnosis. Colonel Lane would give no treatment without demonstration of infection.

A. G. B.

Anderson (Hamilton H.) & Leake (Chauncey D.). **The Oral Toxicity of Emetine Hydrochloride and Certain Related Compounds in Rabbits and Cats.**—*Amer. Jl. Trop. Med.* 1930. July. Vol. 10. No. 4. pp. 249-259. [14 refs.] [Med. School, Univ. of California, & Pacific Inst. of Trop. Med., Hooper Foundation for Med. Research, San Francisco.]

This paper forms part of an extended study of the chemotherapy of amœbiasis. The authors have been unable to find any reports on the oral toxicity of emetine in animals. One hundred rabbits and 60 cats were used in these experiments. They found approximately the same lethal range for single doses of emetine by mouth in rabbits and in cats and it agreed fairly well with the figures given by workers on single subcutaneous injections. This indicates fairly complete absorption from the alimentary tract. Excretion appears to be extremely slow, so that if continued administration is necessary the dose should become progressively smaller. Examination of animals that died revealed degenerative injury to cardiac and smooth muscle and to liver and kidney.

A. G. B.

Casten (Virgil). **Tryparsamide Amblyopia treated by "Forced Drainage" of the Cerebrospinal Fluid.**—*New England Jl. of Med.* 1930. Apr. 3. Vol. 202. No. 14. pp. 676–678. With 2 text figs. [10 refs.] [Massachusetts General Hosp., Boston.]

"An analysis of 1,254 cases of neurosyphilis treated with tryparsamide showed about 2 per cent. had permanent visual damage. It is well known that arsenic appears in the spinal fluid following the intravenous injection of tryparsamide and is presumed that it directly affects the optic nerve by way of the subvaginal space. On the development of serious visual disturbances, an attempt should be made to remove the toxic substance. Kubie's method of "forced drainage" in central nervous system infections has been used with a good result to both vision and hearing. "Forced spinal fluid drainage" probably has definite value as a therapeutic agent in patients with acute amblyopia due to tryparsamide."

"Forced drainage" consists in the administration during lumbar puncture of hypotonic fluids orally, subcutaneously or intravenously: an abundant additional flow of c.s.f. is produced without distress or other drawback. A case is detailed in which this method was applied, with apparently marked success.

A. G. B.

Chopra (R. N.). **A Retrospect of Six Years' Research Work on the Indian Indigenous Drugs.**—*Far Eastern Assoc. Trop. Med. Trans. Seventh Congress, British India, 1927.* Vol. 3. pp. 543–551. [17 refs.] [School of Trop. Med. & Hyg., Calcutta.]

Six years ago, when the Calcutta School of Tropical Medicine was opened, a chair of experimental pharmacology was established for the first time in India. One of the duties alloted to the professor was to make a thorough study of the drug-yielding plants of the country, to isolate the active principles and work out their pharmacological action. Here the occupant of the post gives a retrospect of this work. The problem presented two aspects: (1) The large group of drugs of known value, recognized in the pharmacopoeias of Europe and growing wild or cultivated in India; these required study to see if their quality equalled that of the plants used in the pharmacopoeias; (2) plants of allied species which might form substitutes for the imported remedies.

Instances are given in the present paper, e.g., *Digitalis purpurea*. The author found that many over-sea preparations on the market, for climatic or other reasons, lost 20 to 40 per cent. of their efficiency during transit and storage. Digitalis has been introduced to India and grows well in the Himalayas. The Indian product proved to be at least as good as the European and is gradually coming into use. *Psychotria ipecacuanha* of good quality can be grown in the Himalayas yielding excellent emetine both qualitatively and quantitatively. The emetine from this source is now on the market. *Artemesia brevifolia* grows abundantly in the Himalayas and Hindukush and was found to give a good yield of santonin, of just as good quality as the Russian which is now hard to obtain. Kashmir can produce enough santonin for India with a surplus for export.

Another branch of the work is the investigation of some of the well known remedies used in the indigenous systems of India. Here, the common weed, *Boerhaavia diffusa*, was found useful in ascites and kidney conditions, producing marked and persistent diuresis. *Saussurea lappa* (Kuth root), growing in the Himalayas near Kashmir, was found to be an excellent remedy in spasmodic conditions of the respiratory tract. The extract not only cuts short attacks of asthma, but reduces their frequency. *Holarrhena antidysenterica*, growing abundantly through the dry forests of India, yields conessine, which has a remarkable effect on *E. histolytica in vitro*. It is effective in dilution or 1 in 280,000 as against the 1 in 200,000 of emetine.

These are but examples.

A. G. B.

i. Mhaskar (K. S.) & Caius (J. F.). **A Study of Indian Medicinal Plants. II.** *Gymnema sylvestre*, **Br.**—*Indian Med. Res. Memoirs. Supplementary Series to Indian Jl. Med. Res.* 1930. Mar. Memoir No. 16. pp. 1–49. With 1 map, 1 plate, 2 charts & 20 graphs. [41 refs.]

ii. Caius (J. F.), Mhaskar (K. S.) & Isaacs (Mozelle). **A Comparative Study of the Dried Barks of the Commoner Indian Species of Genus** *Terminalia*, **Linn.**—*Ibid.* pp. 51–75. With 25 graphs on 9 plates. [10 refs.] [Haffkine Inst., Bombay.]

i. In this Memoir from the Pharmacological Laboratory of the Haffkine Institute, Bombay, the authors treat their subjects fully. Here it will be sufficient to note their practical conclusions.—The leaves of *Gymnema sylvestre* given either by mouth or injections cause hypoglycaemia which is never excessive. The drug acts indirectly through stimulation of the insulin secretion of the pancreas. It may be used to check glycosuria in doses of 2 to 4 grams of dry leaf.—The plant is an Asclepiadaceous climber common in many parts of India and in Tropical Africa. That chewing the leaves destroyed the taste of sugar has been known for 100 years.

ii. The conclusions of the second paper are as follows :—

"The pharmacodynamically active barks of the commoner Indian species of *Terminalia* are either : (i) mild diuretics—*T. Arjuna, T. belerica, T. pallida*—, or (ii) fairly potent cardiac stimulants—*T. bialata, T. coriacea, T. pyrifolia*— ; or (iii) have both diuretic and cardiotonic properties—*T. Catappa, T. Chebula, T. citrina, T. myriocarpa, T. Oliveri, T. paniculata, T. tomentosa.*"

A. G. B.

GANORA (Romualdo). Vocabolarietto di termini arabi ed etiopici riguardanti la medicina e la flora medica. [**List of Medical and Botanical Terms in Arabia and Abyssinia.**]—*Arch. Ital. Sci. Med. Colon.* 1930. June 1. Vol. 11. No. 6. pp. 348–374.

This is a vocabulary drawn up for the use of Italians practising in Arabia, Abyssinia and the district, giving the Italian equivalent of many of the diseases, symptoms etc., and of drugs which they are likely to meet with or need to use in the course of their work. Useful doubtless, but of limited scope, as many names have to be expressed by paraphrases.

H. H. S.

KELLY (Francis Charles) & HENDERSON (John McAskill). **The Influence of Certain Dietary Supplements on the Nutrition of the African Native. I.**—*Jl. Hygiene.* 1930. Feb. Vol. 29. No. 4. pp. 418–428. With 3 text figs. [11 refs.]

HENDERSON (John McAskill) & KELLY (Francis Charles). **The Influence of Certain Dietary Supplements in Relation to the Calcium Requirements of Growing African Natives. II.**—*Ibid.* pp. 429–438. With 2 text figs. [8 refs.]

—— & ——. **A Note of the Influence of the Addition of Certain Supplements to the Diets of African Natives. III.**—*Ibid.* pp. 439–442. With 1 fig. [4 refs.] [Summary appears also in *Bulletin of Hygiene.*]

A series of investigations carried out in connexion with the importance of the supply of accessory food factors and mineral salts in the nutrition of the African native. The experimental subjects were selected from the growing boys and adult prisoners serving long-term sentences in Nairobi prison, Kenya Colony. The papers, which are concerned chiefly with the deficiencies of the routine diet of the prisoners more especially in calcium, may be conveniently dealt with together. Most of the subjects on this diet were found to be receiving less than the maintenance allowance of calcium. They were, as a result, continously losing the element from their bodies in varying amounts, occasionally as much as 0·29 gm. per day. A few of the subjects, however, were found to be in calcium equilibrium on the prison diet (which contained 0·3 gm. of the element per day), and only occasionally showed negative balances. The most striking improvement in calcium balance was obtained when milk (0·77 gm. calcium) was added to the diet of the growing boys. In one case, for instance, this supplement changed a negative balance of −0·1 gm. calcium per day into a positive balance of 0·5 gm. per day. The addition of mineral salts (closely allied in composition to the ash of cow's milk), either with or without cod-liver oil, caused a marked improvement in the calcium balance, whereas cod-liver oil alone (15 cc. per day) produced no appreciable improvement. "Where the calcium intake is low the most valuable addition that can be made is one of calcium itself." Their findings emphasize "the futility of adding a calcium absorption promoting vitamin in the absence of an adequate calcium intake. Indeed, where there is a pressing demand for calcium the furnishing of an adequate amount in the food, with or without increase in the vitamin content, would seem to meet the needs of the case."

A. F. Watson.

Lemaire (E.). Le colorant de Giemsa original pour l'hématologie. [**The Original Giemsa Staining in Haematology.**]—*Rev. Méd. et Hyg. Trop.* 1930. Jan.–Feb. Vol. 22. No. 1. pp. 34–36.

Giemsa used originally two watery solutions. These had the composition: No 1, Eosin B extra Grübler 0·05 gm ; neutral distilled water 1 litre: No 2, Azur II Grübler 0·80 gm.; neutral distilled water 1 litre. They are mixed in the proportion of 8·5 cc. No. 1 and 1·5 cc. No. 2. Blood films are fixed in absolute alcohol for not more than one minute, if granules are to be well defined ; stained in the mixture for 30 to 60 minutes ; washed in boiled distilled water and dried in air.

The advantages of the method are its cheapness and the absence of any traces of precipitate.

W. F. Harvey.

Leger (Marcel). Brèves considérations sur les procédés de séro-floculation dans les maladies tropicales. [**Notes on Sero-Flocculation Methods in Tropical Diseases.**]—*Bull Soc. Path. Exot.* 1930. Jan. 8. Vol. 23. No. 1. pp. 31–34. With 2 text figs.

These notes refer to the many serum-flocculation procedures which have been devised as means of diagnosis of tropical and other diseases. They are all of the type of colloidal precipitation reactions and necessitate the establishment of quantitative differences between test sera and normal sera. The author strongly recommends the use of instruments of precision in the measurement of these differences.

W. F. Harvey.

Gordon (R. M.) **A Counting Apparatus for Use with the Microscope.**—*Ann. Trop. Med. & Parasit.* 1930. Apr. 7. Vol. 24. No. 1. pp. 81–84. With 1 text fig. & 1 plate. [Sir Alfred Lewis Jones Research Lab., Freetown, Sierra Leone.]

The author describes an apparatus by which, with two revolution counters of the type used commercially for attachment to revolving drums and a watch spring stop, successive numbers are added to a recording dial on turning one spoke into the next position. It is only intended for record of two sets of figures.

W. F. Harvey.

Rubinstein (P. L.) & Golubewa (E. E.). Ueber eine noch unbekannte Funktion des retikuloendothelialen Systems. X. Der vikariierende Ersatz der Milzfunktion in dem chemotherapeutischen Effekt. [**Vicarious Replacement of Splenic Function in Chemotherapy.**]—*Ztschr. f. Immunitätsf. u. Experim. Therap.* 1930. Vol. 66. No. 1/2. pp. 1–7. [7 refs.] [Microbiol. Research Inst., Education Commissariat R.S.F.S.R., Moscow.]

In former papers from the Moscow Laboratory it had been shown that salvarsan failed to sterilize splenectomized mice infected with *T. recurrentis* in 77 per cent. of cases as against 9 per cent. only of normal mice.

The present communication deals with the effect of germanin on the course of trypanosome infection (*T. equiperdum*) in mice whose spleens were removed at various intervals before the experimental infection, *viz.*, 24 hrs. before to 53 days before. The results revealed the fact that as the time between splenectomy and infection increased, the

sterilizing effect of germanin increased, thus indicating that the cells of the R.–E. system outside the spleen were able to assume compensatory functions.

	Per cent.
Spleen removed 24 hrs. before infection.	Germanin sterilized in 28·6
„ „ 7 days „ „ „ „	38·5
„ „ 23 „ „ „ „ „	92·4

J. C. G. Ledingham.

Rubinstein (P. L.). Ueber die Natur der Immunität beim Rückfallfieber. XII. Ueber die Bedeutung des retikuloendothelialen Systems beim experimentellen Rückfallfieber der Kaninchen. [**The R.E. System in Experimental Relapsing Fever in Rabbits.**]—*Ztschr. f. Immunitätsf. u. Experim. Therap.* 1930. Vol. 65. No. 5/6. pp. 538–542. [6 refs.] [Microbiol. Research Inst., Education Commissariat R.S.F.S.R., Moscow.]

The author, being satisfied that he and his colleagues had clearly demonstrated the severe and lethal nature of *recurrentis* infection in splenectomized mice and guineapigs (see previous reviews) reports in this paper some experiments with rabbits.

Twenty-four rabbits were infected, 24 hrs. after splenectomy, with *S. usbekistanika* along with 16 normal animals. In the first series consisting of 10 splenectomized animals and 6 controls, the infective dose (1 cc. of infective guineapig's blood) was given subcutaneously. All the animals of this series ran a light course.

In the second series consisting of 14 splenectomized animals and 10 controls, the dose was doubled and was given intravenously with the result that 11 of the splenectomized animals succumbed while all the controls survived. The larger dose and the intravenous method of administration account, in the author's view, for the difference between the results in the two series. He concludes that the R.–E. system is the locus of defence against this type of infection, irrespective of the species of animal tested. The experiments, he considers, refute the criticisms directed against the general thesis of himself and colleagues.

J. C. G. Ledingham.

Gradwohl (R. B. H.). **The Schilling Blood Methods.**—*Long Island Med. Jl.* 1930. May. Vol. 24. No. 5. pp. 255–264.

The view held by Schilling regarding the origin of the circulating blood cells is " trialistic " with myelogenous, lymphatic and reticulo-endothelial stem cells for the granulocytes, lymphocytes and monocytes respectively. With this as a basis and a belief in the important relationship existing between the blood picture and the biological reaction of the body to infection, there is developed the use of the " haemogram " in interpreting the stage of the disease and of its progress towards death or convalescence. A small, but important detail in this doctrine is the technique of preparation of the " margin-free " blood smear. A small coverglass is used to draw the blood along a wide slide so that the smear does not reach to the edges. This gives a more uniform distribution of cells instead of having the larger cells congregated at the edge and the smaller in the centre. Both thin and thick drop methods are made use of, as also are methods of supravital staining with damp chamber to bring out reticulocyte content. An application of the oxydase reaction is utilized for the separation of myelogenous cells from cells of lymphatic origin.

The Schilling index of polymorphonuclear neutrophils differs somewhat from the Arneth index in its subdivision of these cells into myelocytes with simple round nucleus, young metamyelocytes with slightly indented nucleus, " band " or " stab " forms of metamyelocyte with deeply indented nucleus and segmented forms with separated lobulation. These represent stages in the advance of age of the polymorphonuclear leucocyte. In normal blood the differential picture should be basophils 1, eosinophils 2, myelocytes 0, young metamyelocytes 0, stab or band metamyelocytes 4, segmented polymorphs 63, lymphocytes 23, monocytes 6 [adding up to 99, but presumably to 100 with the decimal fraction]. The Schilling haemogram shows the biological reaction to disease, without claiming to be a specific picture for each infection. In the beginning of an infection there is a toxic effect upon the bone marrow with interruption in the development from stab or band forms to the segmented form of neutrophil, resulting in increase in the band forms or a shift to the left. This is the simple degenerative blood picture. With increase in infection the shift continues further to the left and young metamyelocytes appear, indicating an irritation of bone marrow with regeneration. If the infection continue, the left-ward shift continues, while if improvement ensues it recedes again to the right. With the commencement of the polymorph shift to the left there is coincident decline in lymphocytes. With recuperation and a shift of neutrophil characters to the right, the lymphocytes increase. At some stage in the infectious period, when resistance dominates invasion, the monocytes show a sudden rise, and this is termed the " dawn of convalescence."

Another index to the state of infection is afforded by the eosinophil picture. The eosinophils decline and may disappear at the beginning of infections to reappear when the polymorph shift is reversed from left to right. A favourable prognosis is given by a return of eosinophils, a shift to the right of neutrophils, an increase in lymphocytes and a marked increase in monocytes. The haemogram affords evidence as to infection, susceptibility and resistance. It is not always easy to recognize the several leucocyte forms and it is useful to know that the young metamyelocyte forms have a sausage-shaped, kidney-shaped or bean-shaped nucleus, appearing more swollen or thicker than that of the stab or band form and possessing, which the band forms do not, nucleoli at each end. The stab or band forms have various shaped nuclei, which may be of T. V. S. or U types. The exact way in which the kaleidoscopic haemogram is to be interpreted in individual cases of disease requires consultation of the author's work itself.

W. F. Harvey.

THONNARD-NEUMANN (Ernst). **Blood Pressure Studies in the West Indian Negro.**—*Eighteenth Ann. Rep. Med. Dept. United Fruit Company, Boston, Mass.* 1929. pp. 251–264. [15 refs.]. [United Fruit Co. Hosp., Almirante, Panama.]

——. Untersuchungen ueber den erhöhten Blutdruck bei Negern in Zentralamerika.—*Arch. f. Schiffs- u. Trop.-Hyg.* 1930. Apr. Vol. 34. No. 4. pp. 183–197. [13 refs.] [United Fruit Company Hosp., Almirante, Panama.]

" The arterial blood pressure of 500 West Indian negroes of an average age of 40 years was determined ; and 167 or 33·4 per cent. showed a systolic pressure above 140 mm. and an average pulse pressure of 68 mm. No marked differences were found between men and women, regarding the distribution of hypertension cases."

The author writes :—

" It appears to be of practical importance to point out again the frequency of diseases of the circulatory system in a working negro popula-

tion, and to emphasize the fact that hypertension occurring in this race is almost exclusively based on cardiovascular or cardiorenal disturbances."
Reference is made to DONNISON's paper [this *Bulletin*, Vol. 27, p. 162.]

A. G. B.

i. TORGERSON (William R.). **Blood Pressure Findings in Porto Rico.**—*Porto Rico Jl. of Public Health & Trop. Med.* 1930. June. Vol. 5. No. 4. pp. 438–442. [Presbyterian Hosp., Santurce, Porto Rico.]

ii ASHFORD (Bailey K.) & DOWLING (George B.). **A Series of Blood Pressures in 250 Cases in Porto Rico.**—*Ibid.* pp. 477–479. [3 refs.] [School of Trop. Med., Univ. of Porto Rico, San Juan.]

i. The author took the blood pressure of 100 hospital patients eliminating those with heart disease, nephritis, pregnancy and sprue. The average red cell count was 3,500,000. The average systolic pressure was 120·2 mm., diastolic 73·8 and blood pressure 46·4 mm. The difference between the sexes was slight. The averages seem a little below those for the United States.

ii. This series, for the smallness of which the authors apologize, consisted of cases seen in private practice, and does not include cases of sprue or cardio-renal disease. The average systolic pressure was 114·3 in males, 120·1 in females ; diastolic 69·1 in males, 76·4 in females.

A. G. B.

RADSMA (W.). Over enkele waarschijnlijke physiologische verschillen tusschen Europeanen in de tropen en in Europa. [**On Some Probable Physiological Differences between Europeans in the Tropics and in Europe.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1930. Aug. 1. Vol. 70. No. 8. pp. 786–803. With 6 charts.

After a period in which the influences of climate on health and disease in the tropics were overestimated, the progress of tropical pathology, on one hand, and of physiological experiments on the other, apparently showing the non-existence of an altered physiological condition in the tropics (EIJKMAN), caused a complete change of views and therewith offered a foundation for more optimism as regards the possibility of acclimatization of the European to life in the tropics.

Though this optimism appears still well justified, yet recent experience throws a new light on the subject of the climato-physiology of the European in the tropics. The author here discusses :—

(1) The body temperature. From the recent literature as well as from his own experiments, he concludes that there is a slight rise of the body temperature of the European in the tropical coastal plain, in comparison with temperate climates. Much confusion in this respect has been caused by not properly taking into account the circumstances under which the temperatures were taken.

(2) The heat production. Basal metabolism estimations in 8 individuals residing 3–4 months in the tropics, yielded results about 10·5 per cent. under BENEDICT's standard values. Here also the circumstances are very important, prolonged rest of the test persons being necessary to obtain trustworthy results.

(3) The alveolar carbon dioxide tension. This shows greater fluctuations, and is on an average lower than the value obtained in Europe, as appears from previous work of the author (see this *Bulletin*, Vol. 26, p. 578).

As the three physiological factors discussed here have to do with the heat regulation in the body, in all probability the differences they show from European values are to be ascribed to climatologic influences.

W. J. Bais.

Radsma (W.). Het cholesterinegehalte van het bloed bij de bewoners der tropen. [**The Cholesterol Content of the Blood of Inhabitants of the Tropics.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1929. Aug. 1. Vol. 69. No. 8. pp. 793–805. [10 refs.]

Bloor's method gives 40 per cent. higher figures for the cholesterol content of the serum than that of Windaus, but the results run exactly parallel. This is caused by the circumstance that the cholesterol in Bloor's extract gives a more intensive colour reaction than pure cholesterol. Accordingly Bloor's reaction is just as useful as Windaus' and to be preferred in view of its simplicity. Tested with this method the cholesterol content (in mgm. per cent.) was found: in 16 Europeans average 191 (maximum 209, minimum 130), in 33 native doctors and pupils of the native medical school average 206 (maximum 300, minimum, 143), and in 45 native servants and coolies average 163 (maximum 240, minimum 114).

The corresponding figures for the digitonine method may be found by dividing these figures by 1·4.

It remains to be found out whether to nutrition or other causes (hookworm disease, malarial alterations of the spleen) are to be debited the lower figures in the poorer classes.

W. J. Bais.

Wilson (C. J.). **The Health Boards Enactment of the Federated Malay States.**—*Malayan Med. Jl.* 1930. Mar. Vol. 5. No. 1. pp. 41–42. [1 ref.]

An account is given of this " Enactment " which came into force in January, 1927. There are thereby established, throughout the four States of the Federation, Local Health Boards with wide responsibilities and powers under the general supervision and control of a Central Health Board. The Local Health Boards are established by the Resident of the State who makes application to the Central Health Board on the recommendation of the Health Board of the Medical Department. The appointment of members is made by the Resident in consultation with the Central Health Board. The author writes :—

" Medical and health services in the Federated Malay States have, until now, been shared between the Medical Department of Government and the private enterprise of employers of labour. Under this new scheme a great weight of responsibility is placed on the Local Health Boards. These responsibilities fall under three heads, viz. :—

" (1) Visitation by a medical practitioner to all estates and small holdings, that is to say to all land alienated for agricultural purposes, situated in the Local Board Area, for the purpose of examining the state of health of all labourers employed therein, and providing treatment for the sick and unhealthy.

" (2) The provision of hospitals for the accommodation of the sick among labourers employed on estates, that is to say any agricultural land exceeding 25 acres in extent, within the Local Board Area.

"(3) The formulation and execution of measures for the prevention of disease over the whole of the Local Board Area, including mining lands, villages and State land, excluding only Sanitary Board Areas."

[There is no indication how and whence the necessary funds are provided.]

A. G. B.

REMLINGER (P.). Les Médersas de Fez au point de vue de l'hygiène. **[The Hygiene of the Medersas of Fez.]**—*Bull. Acad. Méd.* 1930. July 15. Year 94. 3rd. Ser. Vol. 104. No. 28. pp. 78–89. [3 refs.]

The Medersas are the Mohammedan schools or colleges in which students between 20 and 25 work for seven or eight years. At Fez there are some 500 such students. Here we have an account, the truth, but not the whole truth the author tells us, of the bad conditions of hygiene and nutrition in these colleges.

A. G. B.

CHRISTOPHERSON (J. B.). **The Motive in Women's Dress in the Tropics.**—*Jl. Trop. Med. & Hyg.* 1930. July 15. Vol. 33. No. 14. pp. 201–207. With 10 text figs.

An interesting address with practical advice at the close. Dr. Christopherson suggests that the principle of women's dress in the tropics should be men's dress modified for women with no concessions except to the heat. Women in the tropics engage in the same out-of-door pursuits as men, they encounter the same climatic conditions, and the same biting insects: they need therefore the same protection. The skirt is out of place. Trousers, slacks and plus fours with putties or gaiters should be worn, with tunics or smocks and corresponding underclothing.

A. G. B.

YEAGER (Clark H.). **Well Pollution and Safe Sites for Bored-Hole Latrines.**—*Malayan Med. Jl.* 1929. Dec. Vol. 4. No. 4. pp. 118–125. With 9 figs.

Bored-hole latrines, actually well shafts 16 inches in diameter running down into the subsoil water, were described in this *Bulletin*, Vol. 26, p. 1045. To determine what risk of widespread contamination of the subsoil water these latrines produce Yeager undertook the following experiments. He sank a series of such 16-inch bore-holes, disposed as in the accompanying plan, within an area protected from casual pollution both by a double wire fence and by being placed under guard. They reached three feet into the subsoil water and were six to nineteen feet deep. Bacteriological examination by Dr. W. A. YOUNG, of King Edward VII College of Medicine, Singapore, showed absence of *Bact. coli* from the water of all bore-holes. Accordingly a Winchester quart of a twenty-four-hour growth of this bacillus was emptied into the central bore-hole and the others were tested at intervals. Bacilli appeared in them as shown in the plan, they travelled seventy feet in

nineteen days through a subsoil which was permeable, being derived from red sandstone or quartzite and containing little clayey matter, and the experiment then terminated. The direction of the flow of ground water was tested by placing fluorescin in the central bore-hole. It was

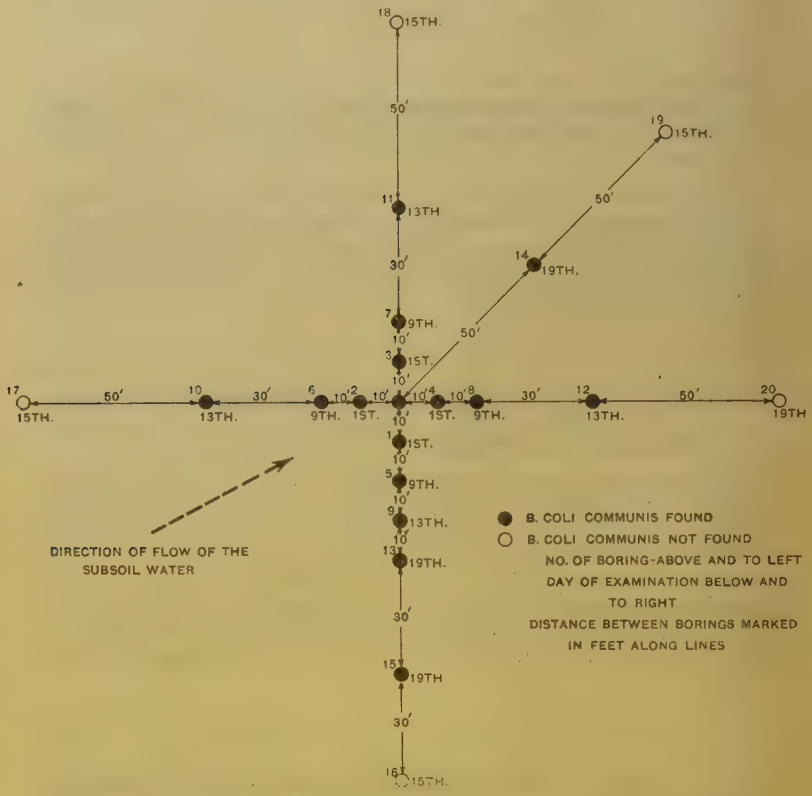


CHART SHOWING DISTANCE OF SPREAD OF *Bact. coli communis* FROM CENTRAL HOLE INOCULATED WITH 1 WINCHESTER QUART OF CULTURE. The bacteria spread against the slight flow of ground-water and infected hole number 15, which was seventy feet away from the central inoculated hole. Holes 18, 19, and 20, although in favourable locations to be infected if the direction of water flow is a factor, were not found to be infected. None of the five holes bored 100 feet away from the centre showed the presence of *B. coli*.

[Reproduced from *Malayan Medical Journal*.]

never detected at more than twenty feet from this, and even then only after the use of 1,600 grams in all. It is concluded that if the distance travelled in the subsoil water by *Bact. coli* is indicative of the potentialities for travel of bacilli of the typhoid-dysentery group, a bored-hole latrine should not be installed within 100 feet of a shallow well in a locality where the subsoil and the ground-water flow are of the kind

encountered in these experiments. It is also advised, apparently as an alternative, that shallow surface wells should be replaced by deep ones with pumps—a wise ideal.

In comment it may be noted that the former proposal implies that a contagium which travels seventy feet in nineteen days can safely be trusted never to add thirty feet to its journey. Many will disagree with that implication and will prefer to suspend judgment pending the further studies which Yeager recommends, particularly in view of the insistence of local sanitary authority in England that cesspools shall always be water tight, and even then shall be 60 to 80 feet from any well. In this paper Yeager is not directly concerned with hookworm infection, for the prevention of which these latrine wells are advised. As has been noted (this *Bulletin*, Vol. 26, p. 552) their frank purpose is to carry infective material into the ground water supply; and, it may be added, in an unenclosed portion of this deliberately to produce those septic tank conditions which are destructive of hookworm eggs. But of course unless all faecal matter is drowned in this way hookworm infection is not destroyed. Now it is merely necessary to glance at the pan of a water closet after the passage of a mushy stool to see how invariable must be fouling of these latrine wells close to their tops, well within the travelling power of infective hookworm larvae. The man who can avoid this fouling with certainty must be capable of the accurate hitting of an eighteen-inch target, by a faecal missile of varying consistence and often with much scatter, projected more or less downwards often violently from a crooked gun barrel (in spite of its being labelled "rectum"), and with aim greatly handicapped by the disconcerting attitude of defaecation. In these conditions even a gun layer in the King's Navy would make poor shooting. And the penalty of each failure by a hookworm infested person to produce deliberate and direct pollution of the subsoil water is almost certainly dejectional hookworm infection for someone. Yeager's work, here considered, implies that whether there is hit or miss the shooting promises to be equally disastrous to public health.

Clayton Lane.

Bablet (J.). A propos de la réglementation des fosses septiques en Indochine. [**Septic Tanks in Indo-China.**]—*Bull. Soc. Méd.-Chirurg. Indochine.* 1929. Oct. Vol. 7. No. 10. pp. 533–538. [Pasteur Inst., Hanoi.]

This is a brief account of the difficulties of good sewage disposal in the towns of Indo-China, especially Hanoi.

Septic tanks plus bacterial beds seem to have achieved some success in European quarters. For the tank itself a minimum capacity of 250 litres per person is demanded if W.C. wastes alone are received; 500 litres if household sullage is included.

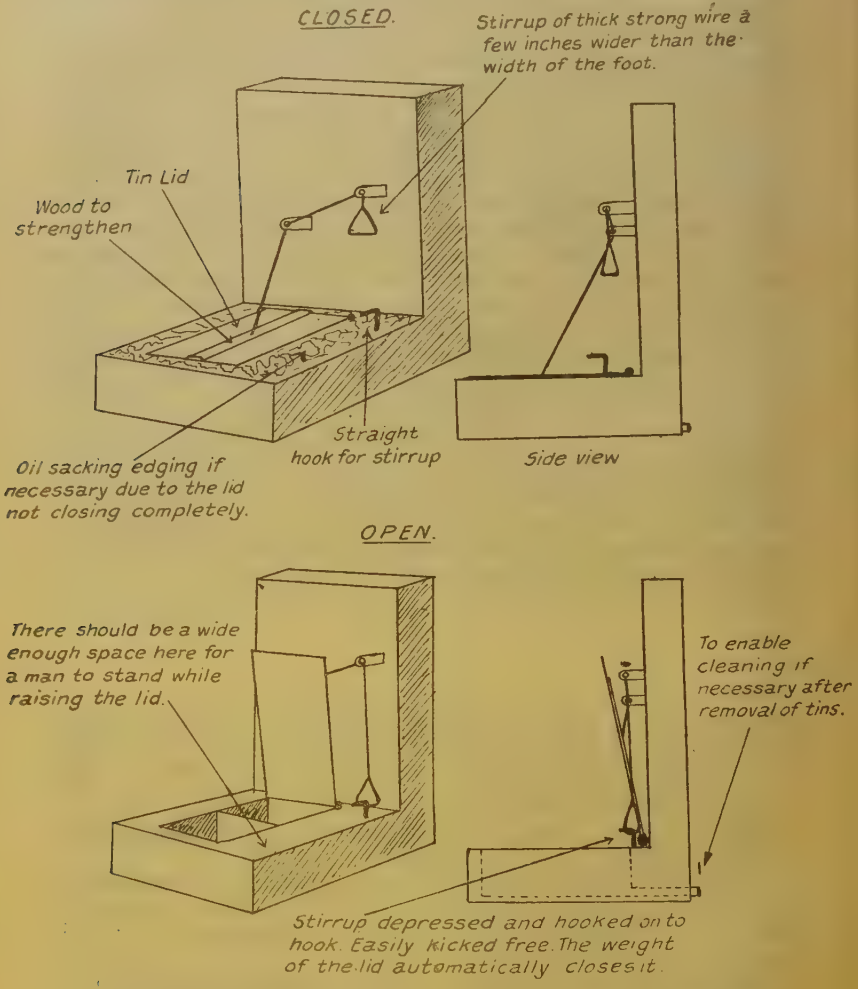
For the bacterial bed a square metre of surface at one metre depth of the usual materials is demanded. The tank is regarded simply as a liquifying contrivance without destructive action on pathogenic bacteria, although the dimensions (250 litres) suggested provide almost 5 days retention in the tank. The effective bactericidal part of the apparatus is thought to be the filter bed.

J. F. C. Haslam.

Brown (H. Horan). **A Method of Fly-Proofing in Indian Latrines.**—*Jl. Roy. Army Med. Corps.* 1930. Mar. Vol. 54. No. 3. pp. 207–208. With 1 diagram.

The following is the complete text of Brown's note. To the abstracter the gadget seems rather "Heath Robinsonian"—

"A great difficulty in the fly-proofing of latrine pans in India is the caste prejudice against *touching* any part of the latrine.


CLOSED.
Stirrup of thick strong wire a few inches wider than the width of the foot.
Tin Lid
Wood to strengthen
Straight hook for stirrup
Side view
Oil sacking edging if necessary due to the lid not closing completely.
OPEN.
There should be a wide enough space here for a man to stand while raising the lid.
To enable cleaning if necessary after removal of tins.
Stirrup depressed and hooked on to hook. Easily kicked free. The weight of the lid automatically closes it.

Illustrating Major H. Horan Brown's device for a fly-proof lid for Indian latrines.

[Reproduced from the *Journal of the Royal Army Medical Corps.*]

"The method suggested in the following diagram overcomes this difficulty in that only the foot is used.

" The user puts his foot in the stirrup, depresses the stirrup and pushes it on to the peg.

" After use, he kicks the stirrup free and the lid falls.

" The only cost should be occasional renewing of the wire rope between the lid and the stirrup.

" The floor should be sloped slightly downwards and backwards for the tin receptacles to facilitate cleaning.

" *Advantages* :—(*a*) Caste prejudice to touching the lid is overcome ; (*b*) fly proof ; (*c*) cheap ; (*d*) easily attached to any present latrine."

J. F. C. Haslam.

Blakemore (W. L.). **Bucket Latrines on Hardouin Estate, Province Wellesley South.**—*Malayan Med. Jl.* 1929. Dec. Vol. 4. No. 4. p. 151. With 2 figs.

The latrines are built in blocks of two with separate compartments. Behind is a small concrete water tank for the coolies' use after defaecation, surrounded by a broad cement apron sloping to cement drains round its periphery. The exit drains are led to a small concrete sump, the outlet of which drains to the main estate drain. The sump pit is emptied daily and its contents buried. The concrete apron is washed down daily when the buckets are emptied.

A. G. B.

van Heurn (W. C.). Over de verhouding tusschen huisrat en rioolrat te Batavia en over de bestrijdingsmogelijkheid van deze laatste. [**Relation between House Rat and Sewer Rat at Batavia : Possibility of combating the Latter.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1930. June 1. Vol. 70. No. 6. pp. 588–594. With 1 text fig.

The author describes the results of systematic catches in and round a European bungalow at Batavia, showing clearly the predominance of *R. norvegicus* over *R. rattus*. He maintains that systematic trapping, as far as regards the house rat by means of Schuyler's all-steel horse shoe trap No. 1, but for the brown rat by means of the pole trap, may considerably reduce their number. The latter traps are by preference to be put up in the sedimentation pits of the house drains as represented in a sketch.

W. J. Bais.

Brown (James Y.). **A Review of Mosquito Control in Lagos.**—*West African Med. Jl.* Lagos. 1929. Apr. Vol. 2. No. 4. pp. 179–182. With 1 plan.

No part of Lagos island is more than 21 ft. above sea-level, and a considerable area is less than 3 ft. above that datum. The average rainfall in the last decade is 67·872 in. and the maximum tidal range is 3 ft. Trees and other plants are important factors in the breeding of mosquitos ; the principal trees responsible being the " Awin," the Mango, the Bread-fruit and the Cashew. The palm, with the exception of the Traveller's palm, in which the larvae have been found on rare occasions, and the banana plant are of no importance in mosquito breedings at Lagos. The swamps, which with few exceptions are partly tidal at high tide, are near all foreshores round the island. It is amongst the vegetation within 20 yds. of the swamp margin that

the mosquitoes breed, except where the swamp contains separate woodland pools. *Anopheles gambiae* and *Culex thalassius* have been found rarely in waters of fairly high salinity. The street drainage has improved considerably in the past two years, but there are still 50 streets in the native quarter that are recorded as anopheline and culicine breeding places requiring weekly oiling. The methods of mosquito eradication or control in operation are : Drainage of swamps, ditching and control by fish, use of larvicides (fuel oil or Paris Green), making swamps tidal (increase of salinity), reclamation and filling, and general sanitary inspection (eaves, gutters, tanks, crab-holes, etc.). The author stresses the importance of contour drainage which lowers the ground water and intercepts seepage into the swamps. Lateral drainage was used in several low-lying areas which were not heavily vegetated, and where the drains could be easily controlled. " Opepe " trees were planted at intervals throughout reclaimed swamp areas to lower the ground water by leaf transpiration. The figures for the house larvae index show progressive improvement since 1925 and the rate of infantile mortality a steady decrease.

H. Home.

Leprince (J. A.) & Johnson (H. A.). **Development of a Power Dusting Device for applying Paris Green as an Anopheline Larvicide.** —*Public Health Rep.* 1929. Apr. 26. Vol. 44. No. 17. pp. 1001–1017. With 13 figs. (12 on 6 plates) & 9 diagrams. [1 ref.]

During 1922–1927 successful experiments with Paris green distributed from airplanes were carried out, especially in the dense growths of Quantico Bay, Va., and Chopawamsic Swamp, at a wind velocity not over 20 miles per hour and provided that the plane was 100 ft. or less above the water. The mechanical dusting device now reported is to make possible the control of breeding places of *Anopheles* larvae of approximately 1 to 100 acres, the specification requiring that it shall be mobile, inexpensive and, if possible, operated by one man. The plant used was made up of portable units of light weight mounted in a light skiff-type of boat, driven by an out-board motor ; the petrol-driven generator was of 110 volts, weight 108 pounds, the centrifugal fan blower, weight 8 pounds, 110 volts, with inlet flange and 1¼ in. suction nose, with a hopper for dust delivery. The whole plant is easily moved from boat to boat. The blower is connected with the generator by a flexible wire cable such as is used with a vacuum cleaner. It is held in the hand or can be fastened to the boat's side and operated from any position and at any angle required. The blower has a theoretical velocity of about 15,000 ft. per minute and moves 45 c. ft. of dust-laden air per minute. Cost of plant $497.50. The plant was tried out in a lake containing thousands of submerged and decaying stumps, with large areas of shallow and densely overgrown water, and many types of moss, duckweed, lilies, etc., and offered the most difficult conditions in which to operate. Full details of the experimental work are given and the methods of control. The conclusions arrived at are that the plant gave excellent results, the material costs being as low as 15 cents per acre for dusting. Hydrated lime is the most satisfactory diluent tested for use with Paris green, and 15 per cent. Paris green mixture gives most uniform results. The wind velocity should not be over 7 or 8 miles per hour and in moderate breezes a 15 per cent. mixture gives a lethal path at least 525 ft. wide. In

ordering Paris green as an anopheline larvicide the authors advise that a sample should be secured before purchase, tested with larvae, and its toxicity demonstrated, because Paris green varies greatly in its larvicidal power, and in the experiments two of the three samples used were unsatisfactory.

H. Home.

Yacob (M.) & Shah (K. S.). **A Preliminary Report on the Suitability of Paris Green as an Anopheline Larvicide as applied to Punjab Conditions.**—*Indian Med. Gaz.* 1930. Feb. Vol. 65. No. 2. pp. 84–88. [11 refs.] [Punjab Epidemiol. Bureau, Lahore.]

The sample of Paris green used in these experiments came from Messrs. Siegle & Co., Stuttgart, and was found to contain 57·7 per cent. arsenious anhydride. Field experiments carried out on a storm water channel showed that a treated area remained free of larvae till the third day aftergreening, that 1 gm. of green in 99 gm. of road dust destroys all anopheline larvae in 10 sq. yards of water surface in 24 hours, and that in greater dilution the green is ineffective. Eggs and pupae are not harmed and the film on the surface does not prevent the mosquito from laying. Since in the Punjab the minimum period of larval development in the autumn is 7–8 days, the intervals between greening should not exceed 6 days. One application to an area of 1,000 sq. yards cost 33 annas, exclusive of the operating charges.

Investigation showed that no larvae could be found at a greater distance than 5 feet from the bank of the stream ; the green was therefore used up to six feet only from the bank and time and money were saved. The green was spread partly by hand-blower and partly by knapsack-blower.

A. G. B.

Lopez (Jose Alberto). **Arsenical Dermatitis—with Case Report.**—*Eighteenth Ann. Rep. Med. Dept. United Fruit Company, Boston, Mass.* 1929. pp. 189–191. [Truxillo Railroad Co. Hosp., Puerto Castilla, Honduras.]

Paris green mixed with road dust or other excipient has been used for several years on the United Fruit Company's plantations, usually in 1 : 100 strength. The mixing is done in a house or shed protected from wind ; the worker therefore must get a thin coating of fine dust on exposed skin and must inhale impalpable particles. Hundreds of pounds of Paris green have been used in the different divisions, but there is no record of toxic symptoms until the present case.

A Honduranean, *aet.* 25, admitted with intense itching of face, neck, hands and forearms, swelling of face and eyelids, and inflamed eyes. Skin was red and indurated with small papules and pustules on all exposed parts. Had joined sanitary squad 3 months before, and was employed in mixing and broadcasting Paris green. Complained only of want of sleep. With mag. sulph. internally and applications of calamine he was nearly well in 3 days. He left on the 4th, against advice rejoined the sanitary squad, and 4 days later returned as bad as ever. Recovery ensued with the same medication, the man became a night workman and had no further trouble.

The author suggests that the condition may develop subsequent to sensitization of the constantly irritated tissues—in other words is a local cutaneous anaphylaxis.

A. G. B.

DI MATTEI (Giuseppe). Sopra una dermatosi provocata dall'uso del "verde di Parigi" nel personale addetto alla disanofelizzazione idrica. (**On a Dermatosis caused in Larval Control Agents by using Paris Green.**)—*Riv. di Malariologia.* 1929. Nov.–Dec. Vol. 8. No. 6. pp. 669–673. [6 refs.] [English summary (5 lines) p. 747.] [Inst. of Hyg. & Bact., Univ., Catania.]

Those engaged in mixing and distributing Paris green are liable, not only to general disturbances such as headache, vertigo, nausea, but to eruptions due to local action of the compound. These vary from mere erythema and brownish pigmentation to vesicles, pustules and multiple small ulcers. The parts affected are the hands, especially the interdigital folds, and parts where sweat glands are numerous, the neck, legs, genitalia and inguinal regions. Hence, manual mixing is better replaced by some form of mechanical mixer; during distribution the operator should wear a mask, he should thoroughly wash and, preferably, bathe after his work before taking food.

H. Harold Scott.

FEEGRADE (E. S.). **Experiments with Isotex as a Larvicide.**—*Indian Med. Gaz.* 1929. May. Vol. 64. No. 5. p. 252.

Isotex, a proprietary preparation of the Chemical Company of New York, is a dark brown fluid forming a film on the surface of water. Experiments were made both in the laboratory and field on anophelines and culicines. The conclusion reached was that isotex is a powerful larvicide but, being fatal to fish, is unsuitable for use in antimalarial measures.

A. G. B.

FEEGRADE (E. S.). **Results of Experiments with Crude Oil Products of the Burma Oil Co., Ltd., Rangoon, as Larvicide.**—*Indian Med. Gaz.* 1929. May. Vol. 64. No. 5. p. 255.

Three proprietary preparations of the Burma Oil Co. were subjected to laboratory experiment to ascertain their properties as larvicides and their relative efficiency. *Aedes argenteus* larvae alone were obtainable in any quantity; large larvae of equal size were chosen. It was early noted that other things being equal the results varied from day to day, and it was found that a room temperature of 90° and over hastened evaporation and decreased anti-larval action. The few experiments are shortly described. Of the three products "Bauxite extract" was most efficient, then "Distillate fuel," and lastly "Victoria kerosene." [No details of relative cost.]

A. G. B.

STRICKLAND (C.). **Soap as a Mosquito Larvicide.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1929. Apr. 25. Vol. 22. No. 6. pp. 509–510. [1 ref.]

Experiments both in laboratory and field were made in India, with marine soap obtained from Messrs. Edw. Cook & Co. and a French firm. For the details the paper must be consulted. It was found to be less effective in the field than in the laboratory, and from 4 to 48 times dearer than kerosene, the cost varying with the relation of surface area to volume of water. In a small pool at Sonarpur a dilution of 3 ounces of soap in 6 gallons of water proved ineffective.

A. G. B.

REVIEWS AND NOTICES.

EYRE (J. W. H.) [M.D., M.S., F.R.S. (Edin.), Professor of Bacteriology in the University of London: Director of the Bacteriological Department of Guy's Hospital, etc.]. **Bacteriological Technique. A Laboratory Guide for Medical, Dental and Technical Students.** Third Edition. pp. xii+619. With 238 text figs. & 3 coloured figs. on 1 plate. 1930. London: Baillière, Tindall & Cox, 7 & 8, Henrietta Street, Covent Garden, W.C. 2. [21s.] [Review appears also in *Bulletin of Hygiene*.]

For nearly three decades Eyre's Bacteriological Technique has filled a useful place among laboratory guides and the appearance of a new edition cannot fail to be noted with pleasure by those who have made use of the book in its previous forms. The special feature of the work is the clear and detailed way in which the technical methods which underlie all bacteriological work are described and illustrated. It does not attempt to be comprehensive; for the most part only the most important methods are described, but in such a manner that even an isolated worker with no special knowledge of bacteriology could carry out the operations without further help. In this respect the new edition is not behind its predecessors, but one feels that it would have been made more useful had the revision been more drastic. As in former editions, such fundamental matters as sterilization, the making of media, the structure and working of the microscope and other laboratory apparatus are described with exemplary clearness. The chapters on media making have been brought up to date by the addition of a short but adequate account of pH. On the other hand, one can detect remains of previous strata which might well have been removed. Thus, in the chapter on Anaerobic Cultivation several of the methods described have passed out of routine use and the simple methods employed for cultivating anaerobes without special apparatus could have been given more attention. McIntosh and Fildes' jar, now probably the most useful apparatus for obtaining anaerobiosis, is described, but the statement that by its aid the isolation and cultivation of anaerobes is as readily carried out as that of aerobes would hardly be confirmed by any worker with special knowledge of this difficult group.

Considering that several chapters are devoted to animal experiments it seems an error of arrangement that such an important routine as the testing of the diphtheria bacillus for virulence should be disposed of under the heading of Milk and that no reference should be made to the now popular intradermic method of virulence testing. In spite of a somewhat disappointing revision the book remains one of the best and clearest descriptions of elementary bacteriological technique available and the best compliment that can be paid to it is to say that it has always appeared a favourite work with beginners, isolated workers, laboratory assistants and others who require clear working instructions in the technical routine of a bacteriological laboratory.

C. C. Okell.

SPAIN. Ministerio de la Gobernación, Dirección general de Sanidad. Comisión central de trabajos antipalúdicos. **Memoria de la campaña contra el paludismo (1928–1929).** [Antimalaria Campaign 1928–29.]—419 pp. Ill. 1930. Madrid.

Although this memoir deals mainly with the years 1928–1929 antimalarial work in Spain was started in 1920 and carried on in small way in the following years. In 1924 the Commission drew up certain anti-paludic regulations which were sent to the King. A grant was made for work in

the provinces and in 1927 this grant was more than doubled, with help from the Rockefeller fund. The organization of the Commission and the regulations are described in the Introduction. There follows a chapter describing briefly the methods employed, the distribution of arthropods, etc., with lists of papers on the various subjects published during the last eight years. At the end of the volume there is a chapter on the geographical distribution in Spain of the Culicidae including Anopheles, Culex and Aedes. The most common carriers of malaria are : *Anopheles maculipennis* and *A. bifurcatus* ; *A. hyrcanus* is found along the Mediterranean coast. The provinces are taken separately and a section is devoted to the work now being done. The information is mainly in the form of statistical tables and charts. Looking through the monthly tables of morbidity one notices that, generally speaking, the worst months are June to October, with September the worst of all. Of course, the data vary for different regions. In the province of Salamanca the disease is not very prevalent and it is stated that there have been no deaths from malaria in the Matilla service area during 1928–1929. On the other hand, in the Delta of the Ebro the disease is more common and a table shows 66 deaths in 1928 and 61 deaths in 1929. In the deltas it is difficult to apply anti-larval methods ; but it is recorded that a great number of gambusias and other Cyprinodonts exist in the waters of the Ebro delta. The methods in an anti-malaria campaign in Spain are the same as those generally employed in any malarious region ; but the eradication of malaria is difficult and expensive and the Spanish Sanitary authorities may be congratulated on the work they are carrying out. The frontispiece is an excellent portrait of LAVERAN.

J. H. Tull Walsh.